



# **Hospital For Special Surgery Annual Report 1969**

## Annual Report 1969

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## Members of the Board of Managers and Officers

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Thomas Parsons III

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Walter B. Wriston

### HONORARY MEMBERS

Samuel S. Duryee

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Mrs. John Holbrook

Earl D. Osborn

Richard N. Pierson, M.D.

T. Kennedy Stevenson\*

E. Sheldon Stewart

Charles J. Symington

B. A. Tompkins

Reginald T. Townsend

\*Deceased





### Message from the President PHILIP BASTEDO

Contracts have been signed recently in the amount of approximately \$3,800,000 to cover the first phase of our Program of Construction and Reconstruction. This includes air conditioning in patient areas, installation of an emergency generator, the addition of two floors on top of the Caspary Research building, enlarging the kitchen and storage areas under the driveway, and expansion of the Department of Radiology and the clinic area. At the same time that this Program is being carried on, various units will be moved to the warehouse and Guggenheim building. After all this has been completed work can be commenced on the addition of two floors to the Hospital building and the vital reconstruction of the operating room suite and ancillary features.

It can hardly be emphasized too strongly that our total Program is absolutely vital to permit us to continue to furnish the finest patient care, teaching and research. It is hard to realize that the Hospital, now only fifteen years ago, has become inadequate without the addition of a single bed. This is due to the immensely more complicated procedures and tests of every kind that are performed today, many of them unknown in 1955.



Our Nursing Scholarship Program enables selected graduates of our Practical Nursing School to take a two-year course in either a hospital or a community college and thereby become eligible for the Registered Nurse examinations. Ten registered nurses, products of these Scholarships, returned to the Hospital at the end of 1969; 13 students remained in the Program. We believe that these graduates will prove to be exceedingly well equipped to furnish first-class bedside care and feel that the idea of granting scholarships to outstanding practical nurses is a sound way to help alleviate the drastic nursing shortage that prevails today.

Hospital operations in 1969 resulted in a loss of \$670,455 after depreciation, as compared with a loss of \$406,156 in 1968. Costs in 1969 climbed another 18% to \$9,526,009, and we were forced to increase our room and care charges substantially during the year in an attempt to improve income correspondingly. Fortunately, the annual rate of increase in operating expense, which has doubled our costs in five years, appears to be leveling off. As is generally known, about 75% of our operating costs results from salaries and wages and these have climbed astronomically in recent years from substandard levels which used to prevail in hospitals. Nevertheless, we are very concerned with the increase in the cost of medical care and the administrative staff is working very hard to analyze costs and reduce these in any way possible without loss of efficiency. It is pleasing to report that already very substantial economies have been effected.

Dr. Philip D. Wilson passed away during the year, at the age of eighty-three. Surgeon-in-Chief of the Hospital for more than twenty years, Dr. Wilson raised the Hospital to its present position of pre-eminence and was a towering figure in the field of Orthopedics, here and throughout the world. He was an inspiring leader and had the devotion and respect of all who served with him. In his later years he was the driving force in establishing our research center, an example of his fresh approach and clear vision. His loss is a heavy one.

Dr. Göran C. H. Bauer retired as Director of Research to become head of the Departments of Orthopaedics at the University of Lund and at Lund University Hospital in his native Sweden. Dr. Bauer made a very significant contribution in developing the research program during the 7 years that he was here. He has been succeeded as Director of Research by Dr. Robert C. Mellors, a noted scientist who has played an important part in our research program since its inception.





## Report of the Surgeon-in-Chief

**DR. ROBERT LEE PATTERSON, JR.**

One of the highlights of the year was the appointment of Dr. Robert C. Mellors as the Director of Research. Dr. Mellors is Professor of Pathology at Cornell University Medical College and Director and Pathologist of the Department of Laboratories at The Hospital for Special Surgery. He previously was Associate Director of Research and a Senior Scientist in the Research Department.

The Hospital continued to render excellent care to its patients, and at the same time the Staff participated in teaching at Cornell University Medical College and to assume a more cohesive participation with the Research Division.

The establishment of a Department of Bioengineering and revamping of the Brace Shop were two of the important changes during the year. Also the setting up of the Bone Tumor and Reconstructive Foot and Ankle Clinics added to the efficiency of the Out-Patient Department. The new Consultation Clinic for both In- and Out-Patients meets once a month and is attended by the Surgeon-in-Chief, Dr. T. Campbell Thompson, former Surgeon-in-Chief, and Dr. Lee Ramsay Straub, Chief of Clinic.

During the year the following changes in Staff occurred:

### **PROMOTIONS AND CHANGES IN APPOINTMENTS**

#### **THE HOSPITAL FOR SPECIAL SURGERY**

Dr. Harlan C. Amstutz — Director of  
Bioengineering Department

Dr. Harry Bienenstock — Assistant Attending  
Physician, Department of Rheumatic  
Diseases



Dr. Edgar J. Desser—Assistant Attending Physician, Department of Rheumatic Diseases

Dr. Margaret Harrison—Assistant Attending Radiologist

Dr. David B. Levine—Chief, Scoliosis Service

Erika Handler, Ph.D.—Assistant Scientist, Research Department

Dr. Arthur Lee-Roy—Associate Attending Anesthesiologist Emeritus

Robert C. Mellors, M.D., Ph.D.—Director of Research, July 1

Dr. Bruce Nitsberg—Physician to Out-Patient Department, Department of Rheumatic Diseases

John Termine, Ph.D.—Assistant Scientist, Research Department

#### **CORNELL UNIVERSITY MEDICAL COLLEGE AND THE NEW YORK HOSPITAL**

Dr. Rolla D. Campbell—Attending Surgeon (Orth.)—New York Hospital

Dr. Richard H. Freyberg—Consultant, Department of Medicine, New York Hospital

Dr. Martin Gardy—Director of Education Program, Department of Medicine, Cornell University Medical College

Dr. Jose Luis Granda—Assistant Professor of Medicine, Cornell University Medical College, and Assistant Attending Physician, New York Hospital

Erika Handler, Ph.D.—Research Associate in Biochemistry, Cornell University Medical College

Dr. Alexander Hersh—Attending Surgeon (Orth.), New York Hospital

Dr. William Kammerer—Clinical Professor of Medicine, Cornell University Medical College, and Attending Physician, New York Hospital

Eugene M. Lance, M.D., Ph.D.—Associate Professor of Surgery (Orth.), Cornell University Medical College

Dr. Ralph C. Marcove—Assistant Attending Surgeon (Orth.), New York Hospital

Aaron S. Posner, Ph.D.—Professor of Biochemistry, Cornell University Medical College

Dr. Leon Root—Assistant Attending Surgeon (Orth.), New York Hospital

Dr. Sidney Rothbard—Professor of Medicine, Cornell University Medical College, and Attending Physician, New York Hospital

John Termine, Ph.D.—Assistant Professor of Biochemistry, Cornell University Medical College

#### **NEW APPOINTMENTS**

##### **CLINICAL**

Dr. Joel B. Adler—Orthopedic Surgeon to the Out-Patient Department

David Clayson, Ph.D.—Assistant Attending Psychologist, Psychiatric-Psychological Liaison Service

Dr. Yvonne de Souza—Assistant in Anesthesiology

Dr. Bernard Ghelman—Assistant Attending Radiologist

Herbert E. Kramer, B.S.—Director of Prosthetics and Orthotics Shop

Dr. Bruce Nitsberg—Physician to the Out-Patient Department, Department of Rheumatic Diseases

Dr. Sylvia Pescatore—Assistant Attending Anesthesiologist

Dr. William A. Seibert, Jr.—Assistant in Anesthesiology

Peter S. Walker, Ph.D.—Project Engineer, Dept. of Bioengineering

##### **RESEARCH**

Lawrence Blau, Ph.D.—Associate Scientist

Ronald W. Gillette, Ph.D.—Assistant Scientist

#### **RESIDENTS\***

Dr. William P. Crutchlow

Dr. Charles Hamlin

Dr. John P. Lyden

Dr. Steven A. Muller

Dr. Robert W. Milgram

Dr. Michael J. Errico

*\*To conform with New York Hospital appointments, Hospital for Special Surgery 1st, 2nd and 3rd Year Orthopedic Residents were appointed Assistant Surgeons and 4th Year Orthopedic Residents appointed as Surgeons.*

#### **FELLOWS**

Dr. Claudio B. Charosky—Orthopedic Fellow (Clinical)

Dr. Ian Fries—Orthopedic Fellow (Research)

Dr. Ernesto Jose Garcia—Rheumatic Diseases Fellow

Dr. Trang Dat Hieu—Orthopedic Fellow (Clinical)

Dr. Charles L. McCarver—Orthopedic Fellow (Clinical)

Dr. Joseph M. Mirra—Research Fellow in Pathology (Immunopathology)

Dr. Robert Rosenthal—Orthopedic Fellow (Clinical)

Dr. Eduardo Salvati—Orthopedic Fellow (Clinical)

Dr. Toshikazu Shirai—Research Fellow in Immunopathology

#### **RESIGNATIONS**

Effective July first, Dr. Göran C. H. Bauer resigned as Director of Research and Attending Orthopedic Surgeon to accept on December the first the Professorship and Chairmanship of the Department of Orthopaedic Surgery at the University of Lund, Sweden. Dr. Bauer came to us as Director of Research in 1962 and developed one of the strongest and most productive research divisions in this country in the fields of musculo-skeletal pathology, immunology and immunopathology.



#### CLINICAL

Mrs. Anne Dunn as Head Nurse of the Out-Patient Department

#### RESEARCH

Hilliard E. Firschein, Ph.D. — Senior Scientist  
Per-Olof Gustafsson, V.M.D. — Assistant Scientist

R. Bruce Hohn, D.V.M. — Special Consultant  
Dr. Krzysztof Krawczynski — Visiting Scientist  
Hakan Kasström, V.M.D. — Visiting Scientist  
Lea Isabel Sekely, Ph.D. — Associate Scientist; Virologist, Department of Laboratories  
Dr. Salvatore S. Stivale — Visiting Scientist

#### COMPLETION OF TRAINING

##### RESIDENTS

Dr. David Anderson  
Dr. Malcolm Ecker  
Dr. Peter Macs  
Dr. Merrill Ritter  
Dr. Michael Rodi

##### FELLOWS

Dr. Walther Bohne — Orthopedic Fellow (Research)  
Dr. William Crutchlow — Orthopedic Fellow (Research)  
Dr. Alfredo Czerniecki — Orthopedic Fellow (Clinical)  
Dr. Eric David — Orthopedic Fellow (Clinical)  
Dr. Georges Muheim — Orthopedic Fellow (Research)  
Dr. Bruce Nitsberg — Rheumatic Diseases Fellow  
Dr. Albino Novaes — Rheumatic Diseases Fellow  
Dr. Marcos Rivelis — Rheumatic Diseases Fellow  
Dr. Richard Welch — Orthopedic Fellow (Clinical)

#### DEATHS

May the seventh saw the passing from activities of the Hospital of one of the most colorful, dynamic and great surgeons, namely, Dr. Philip D. Wilson. For twenty years he was Surgeon-in-Chief of our Hospital, running a great Residency Training Program and was instrumental in the move from 42nd Street up to the Cornell Medical Center and in its affiliation with The New York Hospital and Cornell University Medical College. All of us lost a friend and teacher, but orthopedic surgery lost one of its "nobles."

Others who died during the year:

Elizabeth Focht, Ph.D. — Special Consultant to the Research Department

Dr. Henry B. Kirkland — Consultant in Cardiology

Dr. Harold S. Vaughan — former member of the Attending Staff

#### SPECIAL EVENTS

The Hospital's Alumni Society met in November with Dr. Ian Macnab, Associate Professor of Surgery, University of Toronto, acting as Surgeon-in-Chief, Pro-Tempore. He delivered the Sixth Philip D. Wilson Orthopedic Lecture on the subject "Failure in Spinal Surgery". Two Symposia were held, one on "Disc Surgery of the Lumbar Spine With and Without Arthrodesis" and the other "Disc Surgery of the Cervical Spine With and Without Arthrodesis". Visitors on the Panels were Dr. Frank E. Stinchfield, Professor of Orthopedic Surgery, Columbia College of Physicians and Surgeons; Dr. Joseph Ransohoff, Professor of Neurosurgery, New York University; Dr. Lee Ramsay Straub, Clinical Professor of Surgery (Orthopedics), Cornell University Medical College; Dr. J. Paul Harvey, Jr., Professor of Orthopedic Surgery, University of Southern California; Dr. Bronson Ray, Clinical Professor of Surgery (Neurosurgery),

Cornell University Medical College; Dr. Robert A. Robinson, Professor of Orthopedic Surgery, Johns Hopkins; and Dr. Bernard Jacobs, Clinical Associate Professor of Surgery (Orthopedics), Cornell University Medical College.

At the Annual Meeting of the American Academy of Orthopaedic Surgeons in Chicago fifteen members of the Staff participated by giving papers, and lectures and in giving examinations for the American Board of Orthopedic Surgery. At this meeting members of the Staff and Alumni elected to membership in the A.A.O.S. were Drs. Joel Adler, Henry Sprague, Alan Pavel, John Insall, Donald Stahl, Richard Braun and Kirk Watson.

#### ANNOUNCEMENTS

Our Resident Training now includes affiliations at Newington (Conn.) Hospital for Crippled Children, Bronx Veterans Administration Hospital, North Shore Hospital, Memorial Hospital and The New York Hospital.

Drs. Thomas J. Schulz and John Marshall presented papers at the Annual Residents Conference of the American Orthopedic Association at the University of Oklahoma.

The following former Residents and Fellows passed the American Board of Orthopedic Surgery examinations: Drs. Jesse Dickson, Robert L. Fisher, Robert A. Goldstone, Stephen Homer, Chitranjan S. Ranawat, Harold S. Strasser, N. D. Krishne Urs, Konstantin Veliskakis, Richard Welch and H. George White.

#### AWARDS AND PRIZES TO RESIDENTS

Dr. Robert B. Cameron won the Association of Bone and Joint Surgeons' Nicholas Andre Award and presented a paper on "Strontium<sup>85</sup> Scintimetry in Non-Traumatic Necrosis of the Femoral Head" at the Association's meeting in Mexico City.





Dr. William P. Crutchlow was presented the Lewis Clark Wagner Prize at the Hospital's Alumni Meeting for his paper on "Renal Osteodystrophy" which has been accepted for publication in *Clinical Orthopedics*.

#### **ADULT AMPUTEE CLINIC**

**Dr. Harlan C. Amstutz**

Complete amputee services at the Hospital necessary for immediate prosthetic fitting as well as work on experimental design for both orthotic and prosthetic devices have been greatly advanced by the addition of Mr. Herbert Kramer who assumed the role of Director of the Prosthetic-Orthotics Shop on October 1st. Immediate plans call for modification of existing facilities to permit the incorporation of thermosetting laminated plastics in orthotic devices and for immediate and temporary prosthetics. Expansion plans include a prosthetic shop for research and service. Fourteen new patients were fitted with prosthesis and there were 199 revisits.

Dr. Ralph Marcove assists with this clinic, and the coordinated efforts of Physical and Occupational Therapy, Social Service and the Nursing staff have made the clinic run more smoothly.

#### **BACK CLINIC**

**Dr. Peter J. Marchisello**

The Back Clinic functions as a consultation and treatment clinic. The comprehensive care is provided by the team consisting of an orthopedic surgeon, a neurologist and a physio-therapist with two residents and one fellow. The source of clinic material is primarily the General Orthopedic Clinic which has provided an abundance of cases for residency training and prospective studies.

The newest innovation has been the Hospital for Special Surgery Back Clinic examination form which facilitates and reduces the time for each evaluation.

#### **BIRTH DEFECTS CONSULTATION CLINIC**

**Dr. William Cooper\***

The Birth Defects Consultation Clinic was established in 1965. Initially it was intended to provide consultation service to the comprehensive Birth Defects Service at New York Hospital. The clinic has grown rapidly in the scope of its service and now provides care to a large number of patients other than those referred through New York Hospital. Myelodysplasia remains the largest single diagnostic category in the clinic population, but it is no longer as great as the total number of other entities served. The latter include an impressive variety of congenital anomalies and neurologic defects.

This clinic is conducted once weekly and is served by an attending, a resident and two clinical fellows, a social worker, a physical therapist and a nurse.

During 1969, 25 new patients were registered in the clinic with a total of approximately 200 examinations provided. During the year there were 35 hospital admissions for approximately 50 surgical procedures.

#### **BONE TUMOR CLINIC**

**Dr. Ralph C. Marcove**

The Bone Tumor Clinic has only recently been originated and will have to expand accordingly in time, patient visits, and referrals from the In-Patient Service to the Out-Patient. Subjects proposed to be investigated are osteogenic sarcoma, chondrosarcoma, pathologic fractures and cryosurgery. This clinic will have a unified diagnostic, post-operative treatment planning and a follow-up function for tumor patients.

#### **CEREBRAL PALSY DEPARTMENT**

**Dr. William Cooper\***

The register of patients under active care was approximately 1000 with an increment of 78 new patients during 1969.

\*Deceased

Three evaluation clinics were held weekly, one being a conference-clinic, and one for private patients. Six physicians participated in the conduct of examinations. In addition a consultation clinic for hand problems in cerebral palsy met once monthly under Dr. Allan Inglis' direction. A total of 1,122 examinations were provided during the year.

Supplementary to medical examinations were psychologic services, social services, and specific therapies including physical therapy, occupational therapy and speech therapy. A group program for children of nursery school age was conducted once weekly with the participation of various staff members. The aggregate of services supplementary to medical examinations exceeded 7,000 sessions.

Corrective surgery was carried out on 63 patients during the year, 142 procedures being performed.

Research studies initiated or continued during 1969 included:

1. Study of unusual etiologies in cerebral palsy.
2. Investigation of therapeutic response to L-Dopa in patients with cerebral palsy.
3. Investigation of the incidence and character of scoliosis in cerebral palsy.
4. X-ray studies on skeletal alterations in cerebral palsy.

Staff assigned to the Cerebral Palsy Department included 11 full time and 5 part-time workers.

As in previous years the department continued to provide supervisory medical direction to two programs outside the hospital:

1. *Cerebral Palsy Center of Nassau County.* This is an extensive day-care program for more than 1000 patients with cerebral palsy. It provides medical, educational, therapeutic and vocational services. By affiliation agreement with The Hospital for Special Surgery medical

care is directed by members of our staff, five physicians being in regular attendance. residents, fellows and medical students regularly visit the Center.

2. *HC 20 Classes at P.S. 199.* This combined educational and medical service for children with severe orthopedic handicaps is under the supervision of this department. The school program includes medical and therapy services as well as a regular educational curriculum. In the school register are children with cerebral palsy, poliomyelitis, spina bifida, congenital anomalies, etc.

## **FRACTURE SERVICE**

**Dr. John H. Doherty**

The Fracture Service participated with the other services of the Surgical Service in the care of patients, teaching of medical students and interns, training of the resident surgeons and in clinical and investigative research.

During 1969 the third-year class attended and participated in the care of 3,381 who came to the Out-Patient Clinic at The New York Hospital. They were divided into three groups of 3 to 4 students each who came to the clinic on Monday, Thursday and Friday for six sessions each.

The Intern and Resident Staff attended to the needs of 427 patients admitted to the Hospital. There were 107 private patients and 103 semi-private patients. Twenty-five patients were treated for fractures on the Pediatric Service. There were 192 patients admitted to the Pavilion Service.

During this year 293 operations were performed on the 427 patients admitted to the Hospital. Sixty-five of these operations were on private patients, 63 on the Semi-private Service, 14 on the Pediatric Group, and 151 were done on those patients on the Pavilion Service.

There were 12 deaths on the Fracture Service and 19 complications reported. The House







Staff saw 1,299 patients in the Emergency Room for both consultation and treatment.

#### **HAND CLINIC**

##### **Dr. Lee Ramsay Straub**

The Hand Surgery Clinic is held twice weekly on Monday and Thursday mornings. A total of 82 out-patient visits were made during this period. A total of 376 hand operations were done at The Hospital for Special Surgery during 1969. Of these, 108 were for reconstruction following arthritis, 61 were for post-traumatic reconstruction, 44 were for reconstruction of congenital deformities. Orthopedic Residents and Fellows rotate through this Clinic as well as two from the Plastic Surgery Service of New York Hospital.

#### **HEMOPHILIA CLINIC**

##### **Dr. William D. Arnold**

In 1969 the Hemophilia Clinic served its purpose as a referral and consultation center for patients suffering from orthopedic problems secondary to hemophilia and allied diseases. In spite of the fact that hemophilia is a relatively rare disease, increasing numbers of patients have been registered at the clinic and either seen in consultation or seen for specific treatment of their orthopedic problem. Nearly two hundred of these visits were registered in 1969, and two hundred and forty-three physiotherapy treatments were carried out by Mrs. Charles Carpenter on these patients. Substantial amounts of Cryoprecipitate and other plasma concentrates have been administered to these patients in connection with physiotherapy. We have found that intensive physiotherapy under close medical supervision with adequate amounts of replacement therapy has been surprisingly beneficial in restoring many seriously affected joints to a relatively normal range of motion. Co-operation with Dr. Jose Granda of the department of Rheumatic

Diseases has led to further studies of enzyme activity in joints of patients with hemophilic arthropathy. The expansion of this relatively small clinic dealing with patients suffering from a rare and complicated disease has demonstrated the value of the close association of our Hospital with the other units of the Medical Center, particularly with the Pediatric Hematology Service of The New York Hospital.

#### **HIP CLINIC**

##### **Dr. Philip D. Wilson, Jr.**

The Adult and Children's Hip Clinics and In-Patient Services were increasingly active in 1969. A total of 213 new patients were seen for a variety of different conditions, and 111 patients were operated on, using a wide variety of procedures.

The major clinical accomplishments have followed two very different directions, but both stem from investigation projects. The first of these is the procedure of Total Hip Replacement. This is a "last resort" type of operation which is indicated only in the presence of severe articular damage, therefore after the fact as it were. The second is the neonatal diagnosis and treatment of congenital hip dislocation. This is prophylactic measure to prevent the need for later treatment when it is much more complicated and less successful, therefore before the fact as it were. The Hospital for Special Surgery has led American medicine in each of these areas of patient service.

A report of the first 50 patients undergoing Total Hip Replacement and operated on before December 31, 1968 was presented to the American Orthopaedic Association in June. At the same meeting a succeeding paper on the Bioengineering Analysis of Total Hip Replacement was also presented. A two-day Seminar on the subject was presented at The Hospital for Special Surgery prior to the Alumni Meeting in November. It was well

attended (80) and enthusiastically received. Operative and laboratory demonstrations were given, ward rounds were conducted and 29 patients returned to demonstrate their post-operative functional capacities.

More than 14,000 newborns have been examined as the neonatal hip examination program is now approaching the close of its fourth year of operation. In this period of time, more than 170 infants have been diagnosed as having unstable or dislocated hips. Simple abduction treatment in a splint has been used for the first three months of life whenever possible. No known failures of treatment have occurred. Despite many difficulties, the follow-up of untreated positive children has been energetically pursued, but unfortunately, this has not been entirely successful. The study of the control group diagnosed as normal has made slow progress. A movie on technique of diagnosis has been prepared and was presented at the Alumni Meeting. At this meeting Dr. Victor Mayer presented a paper on the follow-up of rheumatoid patients undergoing cup arthroplasty for hip disease.

#### **KNEE CLINIC**

##### **Dr. John N. Insall**

Since its inception the Knee Clinic has primarily been concerned with evaluation and treatment of patients suffering from osteoarthritis of the knee. In 1969 the scope of the Clinic was widened to encompass the treatment of any knee condition in an adult patient which is not associated with rheumatoid arthritis. During the year there was a consequent increase in patient visits to 946, including 207 new patients. A total of 62 operations were performed. Further experience with tibial osteotomy in osteoarthritis of the knee indicated that the effect of this operation was entirely mechanical and thus close attention must be paid to achieving satisfactory femorotibial angle



following osteotomy. When this angle was between 165 and 175 degrees the outcome was almost uniformly favorable, whereas either under- or overcorrection gave a high proportion of bad results.

Articles to be published from this study are "Natural History of Gonarthrosis" by Dr. Walther Böhne and "Prognosis in Spontaneous Osteonecrosis of the Knee" by Doctors Walther Böhne and Georges Muheim.

In conjunction with Dr. Peter Bullough the clinical and pathological investigation of chondromalacia and its relationship to osteoarthritis is being undertaken.

A long-term study has begun on the results following meniscectomy by clinical evaluation, standing x-rays and in some patients, arthrography and <sup>85</sup>Sr scintimetry. Radiographic studies of the patellofemoral relationship and variations in the shape of the patella in the normal knee are also under way.

#### **LEG EQUALIZATION AND JUVENILE AMPUTEE CLINIC**

##### **Dr. Harlan C. Amstutz**

Thirty-seven new patients were evaluated including 16 juvenile amputees who required a prosthesis with the first year. Four additional patients ordinarily classified as Juvenile Amputees, who have significant inhibition of length in one or more limb segments and will eventually require a prosthesis for equalization, but because they do not as yet require a prosthesis, are statistically kept with the Leg Equalization Clinic patients.

Hopefully, the new combined leg equalization procedures will obviate the necessity for conversion amputation. In one, a one-stage femoral lengthening procedure was successfully completed gaining 4 centimeters. A femoral shortening is planned to complete the anticipated 10 centimeter deficiency. Twelve other operative procedures

were performed.

The classification scheme of Proximal Femoral Focal Deficiencies evolved in this clinic and their treatment was published in proceedings of National Research Council Symposia. The technique of limb mensuration and prognostication for growth and development will be published in 1970. Requirements have been fulfilled and application completed for the clinic to become one of about 25 research centers in the National Research Council Juvenile Amputee program.

#### **THE NEURO-ORTHOPEDIC CLINIC**

##### **Dr. Joseph Moldaver**

At present, we have a combined team associated with the Back Clinic which facilitates the work-up of patients, saving time and trips to the hospital. In addition, the training in Neurology for the orthopedic residents has greatly improved by this new approach.

Besides the routine neurological evaluation, electrodiagnostic testing has been done on patients with peripheral nerve injuries resulting from complications of fractures or other orthopedic conditions.

The clinic has also worked in conjunction with other departments, namely, Rheumatology and Hand Clinic, whenever either neurological evaluation or electrodiagnostic studies were required. A good follow-up of the recent work done on numerous patients with dyskinesia of the neck and face musculature has been very helpful and new therapeutic approach has been under way.

#### **PSYCHIATRIC-PSYCHOLOGICAL LIAISON SERVICE**

##### **Dr. J. Warren Brown and David Clayson, Ph.D.**

Psychiatric consultation for in-patients and out-patients is available as it has been in other



years. The weekly meeting with the Social Service Department — attended by both Drs. Brown and Clayson is an effective instrument for: 1) teaching and 2) early recognition of emotional problems. During the ensuing year, Dr. Brown plans to do psychiatric evaluations on all new rheumatoid patients who have had the onset of their illness within a year of being seen at the Hospital. Hopefully, such a study will prove useful in better understanding the early emotional changes set in motion by this disease.

Dr. Clayson has instigated the routine psychological evaluation of all adolescent patients in the scoliosis group and will extend this service to several other groups in the coming year. Many protocols from out-patients have also been obtained for a control group for research purposes. Psychological profiles are available to residents treating these patients, and test-retest data will be used to determine psychological norms for each group. Research on the effects of prolonged bed rest on subjective time sense and body image has also been undertaken. Psycho-Diagnostic referrals have been filled for both patients and parents of patients.

#### **RECONSTRUCTIVE FOOT AND ANKLE CLINIC INCLUDING CLUBFOOT CLINIC**

**Dr. Alexander Hersh**

This Clinic was organized to provide better patient care for these orthopedic problems, to increase exposure of these conditions to the Residents and Fellows, to improve our knowledge of their management, to stimulate an interest in the conservative and surgical approach, and to afford material for research and investigation on the clinical level.

The first session was held in November. The Clinic meets on Tuesday afternoon. We are off to a good start, enthusiasm is high, and we are seeing the types of cases anticipated.

The Clubfoot Service (Out-Patient and In-Patient) had a total of 1,250 clinic visits

and 59 admissions of new clinic patients. Hospital admissions numbered 47 with 49 operations performed on these patients. In addition, 13 operations were performed on private patients for a grand total of 62.

#### **SCOLIOSIS SERVICE**

**Dr. David B. Levine**

Highlighting this year was a special scoliosis program presented in October in honor of our visiting guest lecturer, Allan F. Dwyer, M.B., M.S., F.R.A.C.S., from Sydney, Australia. More than fifty people attended the one-day program which consisted of cast demonstrations, patient presentations, Scoliosis Rounds, Scoliosis Cardiopulmonary Clinic Conference and culminated with Dr. Dwyer lecturing on his new operative technique for scoliosis.

In April Dr. David B. Levine visited the Institute of Calot in Berck-Plage, France, presenting a paper on the Surgical Treatment of Scoliosis at the First Annual French Scoliosis Society meeting. Papers by members of the Staff were presented at the New York State Medical Society meeting and the Fourth Annual Scoliosis Research Society meeting, Los Angeles, during the year.

One hundred and thirty-four new patients were seen in the Scoliosis Clinic and there were a total of 972 visits during the year. One hundred and fifty patients were admitted to the Scoliosis Service, 58 of them having spine fusions. To date a total of 217 Milwaukee Braces have been constructed in our Brace Shop.

Both clinical and basic science investigative studies are done on the Scoliosis Service. A psychological study of all scoliosis patients admitted to the Hospital is being undertaken, and Dr. Jacob Lifton, Consulting Orthodontist, evaluates orthodontia problems related to scoliosis.

Investigative work is performed in the cardiopulmonary aspects of scoliosis. In the





Pulmonary Research Laboratory, 244 pulmonary tests were performed, and in 1970 an Anesthesiology Fellow will join the study group. Investigative work in collagen study and analysis of idiopathic scoliosis in cooperation with the X-ray Defraction Laboratory are both underway.

#### DEPARTMENT OF ANESTHESIOLOGY

##### Dr. Charles L. Burstein

During 1969 anesthesia was administered to 2,594 patients. An Anesthetic and Recovery Room Record form common to all hospitals affiliated in the Cornell Medical Center was adopted by The Hospital.

The Director participated in a meeting of the International Anesthesia Research Society discussing "Cardiac Arrhythmias Following Succinyl Choline and Intubation".

#### DEPARTMENT OF LABORATORIES

##### Dr. Robert C. Mellors

The Hospital was saddened by the untimely death of Mrs. Norma Bender who was a loyal employee of the Hospital for 23 years. She served as Chief Technologist and Supervisor of the Clinical Laboratories. The Department and the Hospital are most grateful for her long and devoted services to mankind.

The Department activities comprise service, teaching, and research in pathology and clinical pathology. Among the several innovations during 1969, the following are to be noted: Dr. Peter G. Bullough assisted by Dr. Joseph Mirra started a weekly series of lectures and class exercises in musculo-skeletal pathology for the Orthopedic Residents at the Hospital and other interested doctors, which will run from October until June, 1970.

Great strides were made toward the end of

the year to automate some but not all hematologic tests. A Coulter Model S Electronic Particle Counter has been purchased and is now in routine clinical use. The determination of hemoglobin, hematocrit, red blood cell count, white blood cell count, and red cell mean corpuscular volume (MCV), MCH, and MCHC are all available by direct print-out in less than a minute. Accuracy and reproducibility are improved while cost is reduced. This means better patient care.

Present automated systems in Chemistry include: Glucose, urea nitrogen, uric acid, calcium, inorganic phosphorus, sodium, potassium, chloride, carbon dioxide, total protein, albumin, and creatinine.

The identification of pyrophosphate, which is associated with chondrocalcinosis and other pathological disorders, has been undertaken in all surgical cases involving shoulder and knee joints. In 1969 the Microbiology Laboratory studied a total of 7,022 specimens from clinical sources, research problems and epidemiologic control programs in the Hospital. Antibiotic sensitivity tests were performed on 2,568 bacterial isolates of potential pathogenic significance.

Laboratory examinations performed in 1969 include:

Bacteriology	10,938
Chemistry	26,494
Hematology	59,689
Serology	20,030
Urinalysis	14,703
Body Fluids	370
Spinal Fluids	599
Bone Marrow	27
Basal Metabolism Tests	34
Electrocardiograms	3,552
Rhythm Strips	12
GRAND TOTAL	136,448

A comparison with previous years shows continued upward trends. In 1959 there were 45,834 laboratory examinations.









## **PEDIATRIC DIVISION**

### **Dr. Wan Ngo Lim**

In 1969, the Pediatric Division showed a decline in the number of patients admitted. This is a reflection of a nationwide trend, probably as the result of better pre- and post-natal care, a successful immunization program, and the early and adequate use of antibiotics for infections during the last two decades.

More patients primarily admitted for surgery also presented medical complications such as: (a) advanced renal disease; (b) endocrine disturbances; (c) neuromuscular disorders; (d) hematologic problems; (e) cardio-vascular diseases; and (f) pulmonary insufficiency. All these associated medical complications necessitated the special care which was provided by the experts on each discipline.

Patients with birth defects and scoliosis comprised the majority of admissions.

The excellent care and treatment, particularly of extremely ill patients, was the result of coordinated and cooperative effort on the part of the Nursing, Resident and Attending Staffs.

## **DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION INCLUDING OCCUPATIONAL THERAPY**

### **Dr. Anna Kara**

In 1969, 37,796 physical therapy treatments and 2,563 occupational therapy treatments were given at the Hospital. Included in these statistics are patients from Rockefeller Hospital treated upon request throughout the year.

An increased number of patients were referred for rehabilitative techniques as contrasted with therapeutic modalities. This increase is due to several factors: the participation of therapists in specialty programs (Scoliosis, Hip, Hemophilia, CAP, Hand, Amputee, CP, Birth Defects and Low

Back Clinics), and participation in health team conferences on the Adult and Pediatric Services.

Clinical education of physical therapy students continued with 7 from Columbia University, 5 from Downstate Medical Center in Brooklyn, and 1 from the University of Maryland. Hunter College and the Medical College of Virginia were formally affiliated with the Department of Physical Medicine and Rehabilitation.

An In-Service Training Program was given for therapists and for physical therapy students, and post-graduate studies were provided by the Hospital at New York University Post-Graduate Medical School, Columbia Presbyterian Hospital and at an Arthritis Symposium in Boston.

An experimental model of a hyperbaric chamber was obtained to treat a few selected patients with ulcers of the extremities.

Members of the Staff gave lectures on juvenile amputees at New York University, participated in panel discussions about physical therapy treatment of hemophiliac patients at local meetings of the National Hemophilia Foundation and lectured at the Bronx Veterans Administration Hospital on the role of occupational therapy in The Hospital for Special Surgery's Hand Clinic.

The Director participated in the section on Physical Medicine and Rehabilitation at the annual AMA meeting, and the Chief Physical Therapist attended the American Physical Therapy Association Convention in San Francisco.

## **DEPARTMENT OF RADIOLOGY**

### **Dr. Robert H. Freiburger**

Statistics for the year 1969 show a slight increase in the total number of examinations performed, from 36,844 to 38,753. The number of special examinations have increased substantially from 2,631 to 3,027.

The special examinations are those requiring the direct participation of a Radiologist and are in general more complex and time consuming.

One of our 15-year-old radiographic machines has been replaced by a modern powerful radiographic machine with an image intensifying fluoroscope. The extra small focal spot of the x-ray tube combined with powerful x-ray output will allow very short exposures and increases the sharpness of the radiographic image.

During 1969, Dr. Margaret Harrison passed her New York State License examination and the examinations of the American Board of Radiology. Dr. Damianos Doumas also passed his American Board of Radiology examination.

The teaching of the Cornell University medical students is carried on with a series of lectures on bone and joint radiology given on elective basis. Weekly conferences are held with the residents at New York Hospital and at The Hospital for Special Surgery.

The radioactive isotope scanning procedures are performed on the fifth floor of the research building under the auspices of the Department of Radiology. These procedures form an important part of the diagnostic work-up of the patient.

In September, 1969 Dr. Freiburger was Visiting Professor of Radiology for one week at McGill University, Montreal, Canada. During the year he took part in meetings of the American Academy of Orthopedic Surgeons, Sports Injury Division.

Plans are being made for improved X-ray equipment in the operating room and for new bookkeeping procedures to allow greater utilization of computer information service.

#### **DEPARTMENT OF RHEUMATIC DISEASES** **Dr. Richard H. Freyberg**

There has been little change in the conduct of clinical activities during the year. A large number of ambulatory patients with various

types of rheumatic diseases are cared for in three weekly, morning clinics. Teaching conferences precede or follow each clinic session. A full departmental staff clinical conference is held in connection with one clinic weekly.

The Rheumatic Disease In-Patient Service cares for the more ill patients with arthritis who need hospital facilities and professional services that can be provided properly by Rheumatologists. Patients with more complicated problems who need multi-disciplinary care are hospitalized on a special service designated as the Comprehensive Arthritis Care Program. Patients for whom this care is anticipated, are studied in depth by a team of senior Rheumatologists, Orthopedic Surgeons, other medical specialists and allied health professionals. A long range treatment program is planned. The Comprehensive Program Treatment is provided by the same team of professionals over the prolonged period of time, sometimes requiring several separate hospitalizations and multiple surgical procedures in addition to the multifaceted non-surgical treatment. This new program has just finished two years of existence, in which time 143 patients with arthritis, chiefly rheumatoid have been enrolled in the program. Two hundred and sixty operations have been performed on these patients. A critical evaluation of this program has begun and should be completed and formally reported during the following year. Those closely connected with the program consider it the best way to manage these complicated problems in severely ill rheumatoid patients. The conferences and hospital rounds visiting these patients provide excellent teaching and learning experiences.

Consultation service is provided at all time by the Senior Staff. Special teaching consultation rounds are held weekly, when Staff Rheumatologists and Fellows-in-Training, visit patients hospitalized in other divisions of

the Medical Center and advise regarding care of rheumatic disease problems.

A contribution was received from the Marian Tyndall Rogers Fund of the Arthritis Foundation by Dean J. Robert Buchanan, Cornell University Medical College, to be used by the Department of Medicine of New York Hospital with emphasis on the Rheumatic Diseases Section at The Hospital for Special Surgery. Dr. Tyndall was a former member of the Rheumatic Diseases Department at The Hospital for Special Surgery and the Department of Medicine at The New York Hospital.

Although proud of the quality of medical care it provides, the staff is constantly attempting to improve the professional services and specialty training it provides for one of the largest rheumatic disease centers in this country.

#### **UNDERGRADUATE EDUCATION**

##### **Dr. Allan E. Inglis**

As with all institutions of higher learning, the Cornell University Medical College is undergoing changes in the curriculum. The need for change emanates from two facts. The first concerns the quality of the students applying for medical school today. The students are far better prepared for the study of medicine than any students in the past, and the curriculum will be adjusted to these new abilities. Secondly, the need to admit students who are poorly prepared for medical schools such as Cornell because of a relatively substandard social and educational system from which they come. Special tutorial services have been designed to take care of these students without reducing the general standards established by the medical college. The Hospital for Special Surgery participates in the teaching program during all four years of medical school.

During the first year, members of the staff



teach in gross anatomy and in biochemistry; during the second year they teach in pathology, bacteriology and physical diagnosis of the musculoskeletal system. During the third year medical students return to The Hospital for Special Surgery again for a course in orthopedic surgery. The students submit to the Dean an evaluation of each course given throughout the year. Again this year orthopedic surgery was placed in the highest category by the students.

The students return during the fourth year of medical school for elective courses in special areas of orthopedic surgery. The fourth year elective courses are also open to students from other medical colleges. This allows the medical student the opportunity to look at orthopedic surgery as a lifetime career. At the same time, it permits the teachers at Special Surgery to take a good look at the students as potential house officers for our Hospital. These elective courses are popular with the students as evidenced by the number of students selecting our courses for study.

#### **VETERANS ADMINISTRATION HOSPITAL**

##### **Dr. Bernard Jacobs**

The Bronx Veterans Administration Hospital provides a wide spectrum of clinical activities for our Resident Staff. During the past year there were 790 direct admissions to our section. Operative procedures totalled 327, of which about 25% were related to acute trauma. A total of 4,265 out-patients were treated in addition to which 488 consultations were answered from other hospital sections. Staff members participated in the Annual VA Spinal Injury Conference, hosted this year by the Bronx VA Hospital. Clinical projects including those pertaining to shoulder injuries, cervical arthritis and osteonecrosis of the hip were brought closer to completion. A recent Joint Commission inspection team commended this hospital as being outstanding in the VA system.





## Report of the Director of Research

**ROBERT C. MELLORS, M.D., Ph.D.**

The first decade of scientific studies in the Caspary Research Building has been completed. As judged from the total work published to date it is fair to say that research at The Hospital for Special Surgery has merged with service and teaching in a common sense of purpose to provide better care for all patients. Presently more than 60 members of the Hospital's research, attending, resident, and supporting staff, aided by medical and graduate students from Cornell University and elsewhere, are engaged in research in orthopedics, rheumatology, and allied biomedical sciences. The senior members of the research staff also hold professorial rank in no less than seven academic departments of the Medical School and Graduate School of Cornell University, namely, Surgery, Medicine, Pathology, Radiology, Biochemistry, Microbiology and Anatomy. This breadth and depth of talent is in keeping with the modern scientific interdisciplinary approach to the study of health and disease.

A research program should be responsive to the society that it serves and be influenced by the era as well as the area of its work. The pioneering achievements of the Hospital include the successful treatment of malignant bone tumors, hip fractures, arthritis, scoliosis, and club feet. Urgent problems for which understanding, translatable into better patient care, is now actively sought, include the cause of rheumatoid arthritis (and related connective-tissue diseases), the nature of degenerative joint disease, the cause of bone sarcoma, the prevention of fractures in the elderly, the factors underlying crippling diseases of children, and technological innovations for the treatment

of physical disabilities, such as the use of artificial joints and the development of other procedures. Basic studies and significant advances in the pursuit of many of these long-range objectives are recorded in the individual progress reports which follow.

In addition to the acquisition and application of new knowledge in orthopedics, rheumatology, and allied sciences, an important mission of the Research Department is to give others the opportunity to learn scientific methods and to apply them to the solution of pressing problems now at hand. Ten visiting scientists and fellows were engaged in research projects during the last year, three Ph.D. candidates in the Graduate School worked in the laboratories under the guidance of faculty advisors, and seventeen visiting college students were enrolled in the summer research program.

Dedicated men and women, modern machines — the instruments of science — and money are required for a vigorous and productive program of research. The splendid resources of the Philip D. Wilson Research Foundation were made possible by the generosity of friends of the Hospital. The continued support of friends and the contributions of private foundations are gratefully acknowledged and are all the more important at the present time, a period of nationwide reduction in Federal funds for health research.

## **DIVISION OF EXPERIMENTAL PATHOLOGY**

**R. C. Mellors, M.D., Ph.D.; P. G. Bullough, M.D.; C. Y. Huang, Ph.D.; L. Korngold, Ph.D.; L. J. Kutner, M.D., Ph.D.**

This research division includes the Laboratories of Immunopathology, Experimental Pathology, Electron Microscopy, Immunology, Microbiology, and Electron Microprobe Analysis. Drs. T. Shirai, J. Mirra, and K. Krawczynski were active participants



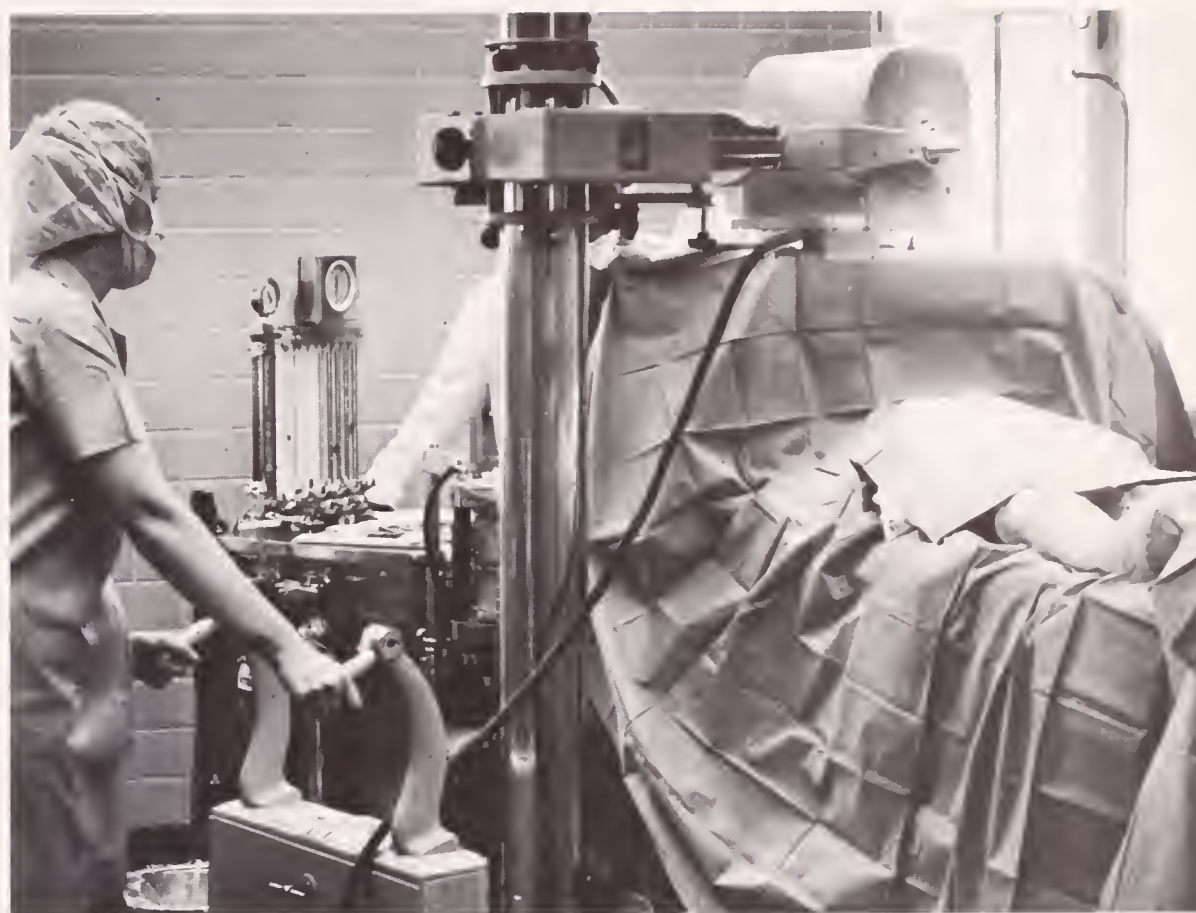
in the program as research fellows. In addition, collaborative studies were undertaken with colleagues at the Sloan-Kettering Institute for Cancer Research and the National Cancer Institute of the National Institutes of Health.

**Connective-Tissue Diseases.** Rheumatoid arthritis is a common form of crippling arthritis and one of the major chronic inflammatory diseases in our country today. While the joints are mainly affected, rheumatoid arthritis is in fact a widespread disorder of the body's connective tissues, the "fabric" or collagenous tissue which connects and supports the many organs and structures of the body.

The cause of rheumatoid arthritis and related connective-tissue diseases is unknown, but two challenging concepts and possibly converging lines of research may advance our understanding:

1. the concept that rheumatoid arthritis is an autoimmune disease, one produced by the reaction of abnormal antibodies (autoantibodies) with body components;
2. the concept that rheumatoid arthritis is caused by a peculiar infectious agent, possibly a slowly acting virus.

Recent discoveries in the Laboratories of Immunopathology and Electron Microscopy indicate that a slowly acting murine leukemia virus with G (Gross) type specificity and transmitted from generation to generation is the probable causative agent or triggering agent of an autoimmune connective-tissue disease which arises "spontaneously" in an inbred strain of mice (NZB mice) widely studied as an experimental model of human autoimmune connective-tissue disease. Thus the two concepts (autoimmune and infectious) regarding the possible cause of rheumatoid arthritis and related connective-tissue diseases are linked together by this experimental observation.



These studies are being further advanced in collaboration with Drs. T. Shirai and C. Y. Huang and colleagues at other institutions.

**Bone Sarcoma.** Viruses belonging to the group of C-type RNA viruses have been shown by various workers in laboratories throughout the world to be intimately associated with, or the cause of, leukemias and sarcomas of five species of animals, in the order of discovery, oncogenic viruses of chickens, mice, rats, hamsters, and cats. On scientific grounds, there is little

reason to expect that human leukemias and sarcomas, for which the cause is presently unknown, will prove to be an exception to what appears to be a "biological rule." On very rare occasion, viruslike particles have been observed by others by the electron microscopic study of tissues obtained from patients with leukemia and other cancers. Recent studies elsewhere (Morton and Malmgren, 1969) have brought forth evidence suggesting an associated infectious agent in human bone sarcoma. During

the last year, studies by Dr. C. Y. Huang in the Electron Microscopy Laboratory have revealed a few suggestive viruslike particles in primary human osteosarcoma bearing some resemblance to the murine leukemia viruslike particles associated with murine osteosarcoma. The possible significance of this finding is being further explored in collaboration with Drs. L. J. Kutner and J. Mirra by the study of human osteosarcoma cells grown in-vitro by the modern methods of tissue-culture. Such cultured cells also afford an opportunity to determine, with techniques recently developed by others, whether host immune factors, such as antibodies or lymphocytes, can destroy sarcoma cells in-vitro, presumptive of a similar role in the defense against cancer in-vivo.

#### LABORATORY OF EXPERIMENTAL PATHOLOGY

**Peter G. Bullough, M.D.**

**Degenerative Joint Disease.** The major interest of the laboratory at this time is in the etiology and pathogenesis of degenerative joint disease, which, since the marked decline in the incidence of infectious diseases has become a major health problem, particularly in the aging population, and is currently one of the major concerns of orthopedic surgeons. Our findings to date have suggested that the early onset of degenerative joint disease in some joints is related to the amount of loading received by different areas on the articular surface. In the areas of non-habitual use it is postulated that the metabolic activity of the chondrocytes is inadequate and that chondromalacia and fibrillation are the result of disuse.

It is necessary to accumulate more evidence than is available at present to identify the reasons for breakdown of articular cartilage in the load-bearing areas of joints. There are indications that the area of

chondromalacia, with its characteristic fibrillation and surface roughness, while being non-load bearing, progressively over the years comes into sliding contact with healthy surfaces on the opposing joint component. This sliding of a rougher component on a smoother could lead to a type of wear on the smoother called abrasive wear. However, there are other possible reasons for the surface breakdown of healthy cartilage. It has been suggested by Meachim and Collins (1962) that in fibrillated cartilage there is increased cellular activity and mucopolysaccharide production. Because of the absence of the surface layer this substance will be released into the joint cavity (Maroudas and Bullough, 1969). There, much of it probably combines with synovial fluid, increasing the mucopolysaccharide content and greatly increasing the viscosity as a consequence. Indeed, in many joints, the fluid is observed to be so viscous as to be gel-like, with the likely results that the fluid will not readily flow to the areas of the articular surface which are in use at any one time.

There is also the possibility that cartilage breakdown is the result of a more generalized failure of material in bulk, in that it can no longer withstand the load imposed upon it. This would mean that in localized areas, for example, the tensile forces developed in the collagen fiber bundles exceed the tensile strength; and the compressive stresses cause failure of the ground substance across critical shear planes.

We aim to continue our study of the normal patterns of aging in human joints and relate the macroscopic and microscopic findings to the patterns of contact in the joint. The effect of load carrying and other factors on the metabolic activity of the chondrocytes will be studied, and in co-operation with an engineer, the patterns of surface lubrication and wear and the load-bearing characteristics of the cartilage from different areas of the

joint studied. From these studies it is hoped that a better understanding of the pathogenesis and etiology of degenerative joint disease will emerge. Our approach to the problem will be multidisciplinary, involving a clinician, a pathologist, a chemist and an engineer.

**Meniscus of the Knee Joint.** The studies on the meniscus of the knee joint were prompted by an interest in the load-bearing characteristics of that joint. The work of previous investigators (Bennett, Waine and Bauer, 1942, and Fairbanks, 1948) have indicated that a considerable part of the load transferred across the knee joint may be carried through the semi-lunar cartilages. The shape and attachments of the semi-lunar cartilages are such that under normal loading conditions tension will be generated in them. We found that the majority of the collagen fibers in the meniscus are arranged circumferentially to resist the tension but that there are radially disposed fibers which most probably act as tie fibers to resist longitudinal splitting of the meniscus (Fig. 1). The tensile strength of the meniscal tissue was found to be in the order of 127 Kgs/cm<sup>2</sup>.

#### LABORATORY OF IMMUNOLOGY

**Leonhard Korngold, Ph.D.**

**Alkaline Phosphatase.** During the last year we tried to find a test capable of distinguishing bone from liver alkaline phosphatase. Antigenically these two enzymes seem to be identical and they have the same electrophoretic mobilities. Since alkaline phosphatases contain a carbohydrate with sialic acid, it was decided to see whether neuraminidase digests the phosphatases of bone and liver at a different rate. Bone alkaline phosphatases obtained from osteosarcoma and liver alkaline phosphatases were subjected to neuraminidase for various time intervals. It was found that bone



alkaline phosphatase was more susceptible to digestion with this enzyme than was liver alkaline phosphatase. The progress of the digestion was followed by changes in electrophoretic mobility of the alkaline phosphatases, and under those conditions the electrophoretic mobility of the bone alkaline phosphatase changed sooner than that of the liver enzyme (Fig. 2). These findings suggest that careful timing of the digestion of liver and bone alkaline phosphatases with neuraminidase can aid in their identification. When sera from patients with Paget's Disease of bone were treated with neuraminidase, the serum enzyme reacted in a manner similar to that of bone alkaline phosphatase.

**Liver Antigens.** Besides alkaline phosphatase we also studied other tissue antigens, with special emphasis on antigens obtained from human livers. A comparison of these normal antigens and those from hepatomas has been started. Since some of the liver antigens can be detected in the urine of patients with different diseases, it may ultimately be possible to use these findings for diagnostic tests.

#### **DIVISION OF ULTRASTRUCTURAL BIOCHEMISTRY**

A. S. Posner, Ph.D.; J. L. Granda, M.D., Ph.D.;  
E. S. Handler, Ph.D.; P. J. Tannenbaum, DD.S.;  
and J. D. Termine, Ph.D.

The aim of this group remains the elucidation of the structural biochemistry of hard tissue, and other connective tissue. A knowledge of the atomic arrangement in these tissues will lead to an understanding and treatment of the pathology of these tissues.

Past work in this laboratory has shown that bone mineral consists of roughly 65% small crystals of bone apatite and 35% amorphous calcium phosphate. A similar amorphous phase has been shown to be the precursor in the preparation of synthetic hydroxyapatite.



Work continued this year on the characterization of synthetic amorphous calcium phosphate. An x-ray scattering study showed this material to be less dense than hydroxyapatite and corroborated the earlier view that these two compounds were physically and chemically different. Small angle x-ray scattering studies showed that the particle size of the precursor amorphous material was always at least three times the average diameter of the final crystalline phase.

A protracted study has begun on the kinetics of formation of amorphous calcium phosphate, its stabilization by the presence of certain physiologically significant ions, and the kinetics of its conversion to hydroxyapatite. All this is being done to understand the role of the amorphous phase in the process of mineralization of connective tissue. The effects of a number of substances on this test system were followed. In addition, some infrared absorption measurements were made on the amorphous solid to see if the additives which stabilized this material had bonded chemically to their surfaces.

Crystallographic studies on hard tissue continued. Like bone, dentin in teeth was found to contain a high percentage of amorphous calcium phosphate admixed with the usual poorly-crystallized apatite. Mature dental enamel, on the other hand, contained no amorphous phase but was wholly crystalline. It remains to be seen if developing enamel has amorphous calcium phosphate present as would be predicted from the synthetic experiments in this laboratory. X-ray diffraction studies continued on the structure of calcium phosphates resembling hard tissue deposits. In addition, the methodology was used to identify the phases present in a number of cases of pathological mineralization.

An x-ray scattering method was applied to elucidating the molecular configuration of the simple protein, insulin. It is hoped to apply

the methodology, once perfected, to more complicated non-crystalline proteins of interest in connective tissue. Most important in this work is the development of an x-ray method for the study of amorphous or non-crystalline structures since most proteins are present in the body in the amorphous state.

The role of lysosomal enzymes in the destruction of cartilage in certain diseases has been studied in this laboratory. In this regard a program on the chemical nature of the lysosomal membrane has been carried out. The structural protein of the lysosomal membrane of the rabbit polymorphonuclear leukocyte was characterized by chemical analysis, disc electrophoresis, sedimentation analysis and gel filtration analysis.

Finally, a study was begun to identify the mineral present inside of active osteocytes (bone cells). Preliminary x-ray diffraction studies show a calcium phosphate similar to bone mineral to be present in osteocytes separated from extracellular bone tissue by grinding and centrifugation.

## **SCOLIOSIS**

**David B. Levine, M.D.**

This year saw the start of a basic research program on bone from scoliosis patients. Infrared absorption spectrum photometric analyses were performed on normal and scoliosis bone from the same patient. In addition, amino acid analyses have been run on the protein from the normal and diseased bone. Other techniques such as the polarizing microscope, the electron microscope, and electrophoresis are also being applied to the study of bone afflicted by this disease. The aim of this study is to find some differences on the chemical level which may lead to the proper management of this disease.

Past work at The Hospital for Special Surgery has elucidated the nature of the calcium phosphate in the normal bone by

means of x-ray diffraction techniques.

A program has been initiated this year to compare scoliosis bone with normal bone using x-ray diffraction. This too will give us information about the means in which the diseased bone differs from the normal bone on the molecular level. This work is being carried out in the Laboratory of Ultrastructural Biochemistry at The Hospital for Special Surgery with the collaboration of Dr. Aaron S. Posner.

The biochemical studies are being done in collaboration with Dr. Shirley Motzkin, Chairman of Life Sciences, Brooklyn Polytechnic Institute, and the work is being carried out both in the laboratories here at HSS and in Dr. Motzkin's laboratory.

A series of research planning sessions have been held during this year in which scientists, physicians and surgeons from many disciplines have participated. There has been a concerted effort in these meetings to bring many viewpoints to bear in stating the research needs in the field of scoliosis. The above program is a result of these planning sessions.

## **DIVISION OF RHEUMATIC DISEASES**

**R. H. Freyberg, M.D.**

An active research program has been pursued in various clinical problems relating to rheumatic disease and in some laboratory projects concerning diseased connective tissues. The variety of the subjects of clinical investigation is exemplified by the following list of papers presented by members of the Rheumatic Disease Department at the International Congress held in Prague, Czechoslovakia in October:

Clinical Studies of Azaribine (triacyetyl 6-Azauridine) in Psoriatic Arthritis, by Drs. William Kammerer and Marcos Rivelis. This new medicine was critically evaluated and found to have moderate to marked therapeutic value in some patients; some undesirable "side effects" were encountered, chiefly gastro-intestinal discomfort.



A late Complication in Ankylosing Spondylitis: Vertebral Destruction at Unfused Segment, by Drs. Marcos Rivelis and R. H. Freiburger. This interesting complication was encountered by the investigators during the extensive review of the course of this illness in 100 patients treated in this institution over the past 15 years. Results of the total study are now being summarized for a scientific report to be made in the near future.

Rheumatoid Heart Disease—A Clinical Study, by Drs. D. Roseman, B. Rogoff and M. Magida. This study of the incidence and characteristics of cardiac abnormalities in 104 patients with chronic rheumatoid arthritis afforded a basis for the authors to outline criteria for clinically suspecting the existence of heart disease as a part of the rheumatoid pathology.

A Study of Rheumatoid Factor and Prognosis in Rheumatoid Arthritis, by Dr. Carl A. Berntsen. This retrospective study of 100 patients followed from 5 to 15 years pointed up limitations of prognosis that could be based upon preceding change in amount of circulating rheumatoid factor.

Fate of Regenerated Synovium Following Synovectomy of the Knee in Rheumatoid Arthritis, by Drs. C. S. Ranawat, L. R. Straub, R. H. Freyberg, J. Granda and M. Rivelis. This was a preliminary report of histologic findings and content of some lysosomal hydrolytic enzymes in the reformed joint capsule lining after surgical removal. This study is being expanded and will be continued for several years. A closely related study of results of synovectomy performed early in the course of rheumatoid arthritis is continuing as a part of a multi-center investigation.

Factors Affecting the Time of Onset and Severity of Destructive Damages in Rheumatoid Joints, by Dr. R. H. Freyberg. In a group of 100 patients the time of onset of significant damages and resultant disability

varied from as short as 2 years to as long as 20 years after inflammation began in that joint. Of many possible factors studied, the only determinants of damages found to relate were severity and persistence of synovitis.

The studies of collagenase production by inflamed synovial tissue and its role in the effects of the inflammation to cause articular cartilage destruction are being continued and expanded by Drs. M. Hoffman and J. Granda.

Investigation of the immuno-suppressive effect of Cyclophosphamide and its therapeutic value in rheumatoid disease by Drs. M. Gardy, M. Hoffman, and M. Rivelis is continuing and will require another year or two to complete.

Drs. B. Mascarenhas and J. Granda are continuing their extensive study of gold metabolism in rheumatoid patients being treated with gold compounds. In many patients complete excretion of gold has been measured uninterruptedly for many weeks, and plasma concentration has been frequently determined, when different amounts of gold have been injected. Similar studies have been conducted for short, sampling periods in many more patients, some with good therapeutic results, others with no evidence of benefit and in others showing evidence of toxic effects. These studies will continue until enough data has been accumulated to indicate whether or not this form of treatment can be regulated to give greater and more consistent benefit and less or even no toxicity. These same investigators have started a new research into the characterization of human red blood cell membrane, white blood cell membrane and lysosomal membrane by physical, chemical and immunologic techniques.

The investigations of collagen, its nature and properties in relation to connective-tissue disease, are being carried out by Drs. S. Rothbard and R. Watson.

## LABORATORY FOR THE STUDY OF COLLAGEN

S. Rothbard, M.D.; and R. F. Watson, M.D.

Studies on the antigenicity and structure of collagen from various laboratory animals and man have been continued.

The native collagen molecule consists of three polypeptide chains wound about each other and bound by inter- and intramolecular hydrogen bonds. Many workers are trying to find out where on the collagen molecule the antigenic determinants are. Guanidine-urea treatment is believed to break the bonds so that the molecule separates into its constituent chains. Since the various components of collagen are not separated by electrophoresis in agar gel, starch gel electrophoresis has been employed. With this method, four bands have been identified using urea rat collagen preparations. When cutouts are made from the starch gel onto agar gel plates, immunodiffusion reveals definite antibody reactions with only two of the four electrophoretically separated fractions.

Hydroxyproline peptides, an apparent amino acid indicator of collagen, have been identified in urine and serum of animals and man. These peptides are increased in urine of young growing animals and of those with osteolathyrisms. Human subjects given growth hormone, rapidly growing children, or patients with acromegaly also have increased urinary excretion of hydroxyproline. The hydroxyproline compound is believed to be a metabolic product of collagen and a measure of the soluble collagen pool. Our preliminary studies have shown by immunodiffusion an immune reaction between sera of young rats, 23 days old, and rabbit anti-rat collagen serum. This reaction was not found in sera of adult rats. A similar reaction has been observed between human cord blood and antibody to human collagen. Further studies will be needed to determine

whether this is a specific reaction between soluble collagen in serum and the corresponding antibody. If this immune reaction proves to be reproducible and specific, it will provide a practical means of determining the breakdown of collagen protein in various connective tissue diseases.

Studies to determine whether collagen from lathyratic rat embryos and babies differs immunologically from normal rat collagen are being continued. We have shown that salt-extractable lathyratic collagen fixes complement in the presence of antibody to acid-soluble collagen from normal rats. To complete this study, antibody is being prepared to lathyratic collagen to see whether this antibody will react specifically with normal collagen.

The preparation of anti-human collagen serum of sufficiently high titer for conjugation with fluorescein isothiocyanate has made possible direct immunofluorescent staining of collagen in human tissue sections. Thus far, human tissues obtained from biopsy or post-mortem material have included normal skin, liver, intestine, spleen, kidney, heart, thyroid, and synovia. The specificity of the reaction of the antibody to human collagen with its antigen had been established previously by various immunological and enzymatic tests; the fluorescence occurs only where collagen or reticulin is present. Sections of pathological material have also been examined; these have included myocardial fibrosis, cirrhosis of the liver, and osteogenic sarcoma. The value of this technique for the identification of collagen and reticulin in normal and pathological material is its specificity and simplicity. This study will be continued and extended to various connective tissue degenerations, such as, fibrinoid, hyaline, mucinous degeneration, and amyloid.

#### **BIOCHEMISTRY OF INFLAMMATION**

**J. L. Granda, M.D., Ph.D.**

The overall interest of this laboratory is to

define the cellular processes that are put into motion where the organism reacts to a non-lethal injury. At the present time, studies carried out in collaboration with Drs. B. R. Mascarenhas and M. L. Hoffman are centered upon the process of phagocytosis, which involves the engulfment of foreign material or debris and its digestion by hydrolytic enzymes. During the last year efforts have been directed towards the characterization of the membranes involved, namely, the cell and lysosomal membrane as well as some of the enzymes that take part in the digestion of foreign materials. We have studied the lysosomal membrane of the polymorphonuclear leukocytes, defined its chemical composition and isolated and partially characterized one structural protein from the red cell membrane, that represents one third of the total protein of the membrane.

Standard protein chemistry techniques were used in these studies. As an illustration, Gel filtration chromatography was used to establish the homogeneity and size of the structural protein of the lysosomal membrane as shown in Fig. 3.

The study of the hydrolytic enzymes has been centered around cathepsin,  $\beta$ -glucuronidase and acid phosphatase. The activity levels of these enzymes have been measured in rheumatoid, normal and post-synovectomy synovium. In addition, human cathepsin from rheumatoid synovium has been purified 20-fold.

#### **LABORATORY FOR TRANSPLANTATION IMMUNOLOGY**

**E. M. Lance, M.D., Ph.D.**

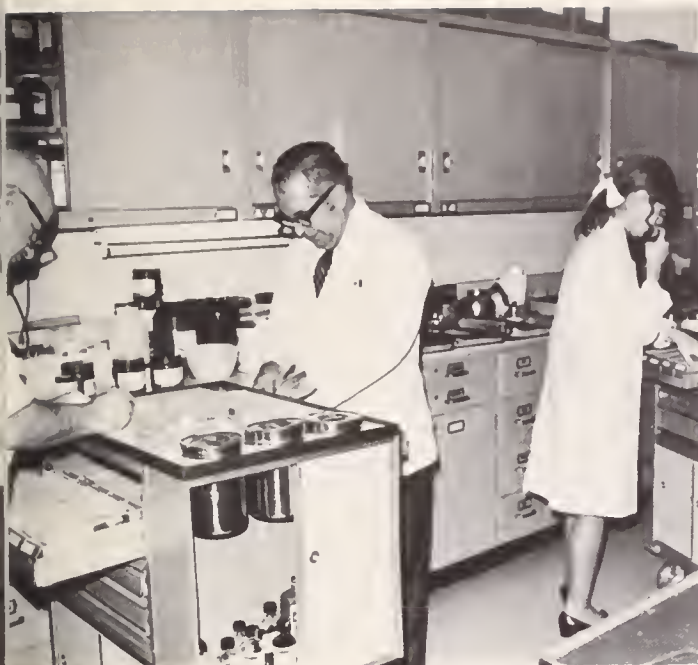
During the past year our efforts have been directed towards evolving models of clinical transplantation and understanding the basic immunological reactions which constitute the chief obstacle to their implementation.

**Study of Lymphoid Populations.** A variety of cell types collaborate in the recognition and rejection of foreign tissue transplants. Our current knowledge of the natural history and quantitative aspects of these populations is sorely deficient. For this reason, we have devised a method which allows quantitation and segregation of lymphoid populations making use of radioactive labels so that the activities of these cells can be followed both during normal resting conditions and during immune responses. The method has allowed quantitation of at least two populations of lymphocytes and we can now be quite descriptive about the normal compartmental distribution of these populations and how they vary over the entire life span of the animal. This work has been largely carried out by Mrs. Marion Zatz, a Ph.D. candidate in our laboratory. Dr. Ronald Gillette has been applying similar techniques to the study of macrophages, which are important cells in both the initiation and rejection of tissue grafts.

Having established base lines for these cell populations, we are now studying the way in which various immunosuppressive agents, including antilymphocyte serum, alter the number and functions of these cells. We have learned that the combination of antilymphocyte serum and small doses of Hydrocortisone are particularly effective in eliminating those cells primarily responsible for the initiation of homograft rejection.

**Transplantation Tolerance.** We have been successful in creating a model of transplantation tolerance within and across species barriers. This method employs pretreatment of the animal with antilymphocyte serum to set the stage for tolerance induction and the use of viable lymphoid or marrow cells as the tolerance conferring inoculum. When this regimen is combined with small doses of whole body irradiation, a virtually life long state of





nonreactivity towards homograft antigens can be achieved. This allows the permanent acceptance of skin grafts. The situation with respect to heterografts is somewhat more intransigent. Technical success in this model has been achieved. However, it is apparent that a good deal more work will be necessary before results of sufficient significance are obtained to warrant translation into clinical models.

This work on tolerance, which has been largely achieved in a mouse model, has now been extended to a large mammal: the canine. Using analogous techniques it has been possible to achieve transplantation tolerance to homograft antigens in outbred strains of beagle dogs.

**Transplantation of the Canine Hind Limb.** We believe limb transplantation as a clinical reality lies just beyond the immediate horizon. The obstacles at the moment are the high risk of current immunosuppressive regimens. Because of our belief that this obstacle will be shortly removed, we have begun a program wherein the hind limb is exchanged between dogs and is maintained using antilymphocyte serum as the sole immunosuppressive agent. Our efforts at this point have been largely devoted to perfection of the technique. Nonetheless, three successful limb transplantations have been performed, the longest surviving up to this time for two months. Detailed analysis of peripheral nerve regeneration, function of transplanted joints, muscles and tendons will be forthcoming. This work is being conducted in collaboration with Dr. Frank Vieth of Montefiore Hospital and Dr. Allan Inglis.

**Autoimmune Disease.** Dr. Ian Fries, who is spending a year with us as orthopedic research fellow, has extended our initial observations on an experimental model of immune arthritis which bears close resemblance morphologically to the human rheumatoid disease. The thrust of this work currently is to identify the type of

immunological reaction which is pertinent to the pathogenesis of the changes induced when enzymatically treated IgG fragments are introduced into the rabbit knee joint. Tentatively, it appears that a cell mediated response (akin to the type of response involved in transplantation rejection) is the most important factor. It further appears that these changes can be induced when protein from the individual animal is reintroduced making this a true autoimmune reaction.

**Clinical Application.** In conjunction with the hand service, a homotransplant consisting of two whole bones and three joint surfaces, was performed on a young boy whose thumb metacarpal required removal for an otherwise incurable bone tumor. At this time, some six months post surgery, the result is an unqualified clinical success. Nonetheless, further follow up will be necessary to establish whether procedures of this kind can be more widely applied.

#### **BIOENGINEERING LABORATORY**

**H. C. Amstutz, M.D., and P. S. Walker, Ph.D.**

The activities of the bioengineering laboratory have expanded, effort being directed mainly toward the development of total joint replacements and associated problems. Also, clinical investigations and teaching have both formed an important part of the work. Joint replacement has been the subject of two recent meetings: the first, in conjunction with Dr. Philip D. Wilson, Jr., was held at the hospital prior to the Alumni Meeting; the second was a national meeting in Washington of the National Research Council with the Academy of Orthopaedic Surgeons. Drs. Harlan C. Amstutz, Peter S. Walker, Peter G. Bullough and also Dr. Robert Johnson (a collaborating scientist from NASA) presented papers. Peter S. Walker, a recent Ph.D. from Leeds, England, joined the staff in November.

#### **Materials and Testing.**

**Friction and Wear Analysis:** In metal-plastic joints, stainless steel in conjunction with ultra-high molecular weight polyethylene continues to be the first choice. Extensive laboratory tests, and clinical results from implants of up to five years duration have confirmed the excellent friction and wear characteristics of polyethylene. However, the search goes on for still better materials, those of promise including the polyimides and pyrolytic carbon. Martin Rubinfeld has carried through most of this work.

For full-scale trials of new designs, the joint simulating machine is being modified, to impose true walking cycles on joints, measure friction, and produce realistic wear patterns.

**Biocompatibility:** Local tissue reaction has been studied for over two years from implants in dogs and rabbits, and several materials are now being fabricated into prostheses for clinical trials. Tibo Van der Does has participated in these studies, and Dr. Peter Bullough's expertise has been valuable.

**Skeletal Fixation:** Experiments on dogs to investigate the use of polymethyl methacrylate have been completed. The material was successful so long as rigid fixation was achieved at the time of implantation. Optimization of mixing and insertion techniques was the summer project of Dean Fuller, an engineering graduate from Columbia University.

#### **New Designs.**

**Hip and Knee Prostheses:** Geometric measurements of a wide range of hip x-rays, computer analyzed, has enabled a new design of total hip joint to be completed to cater for size variations of individuals. The Waldius knee prosthesis has been modified and used in two patients, and to aid further improvements, a kinematics study is under way by Professor Barry Wolf of NYU, and Robert Glaser, a summer medical student.

**Tendon Replacement:** The success of artificial tendons has been evaluated biologically, and now mechanically on specimens implanted in dogs about one year ago. Promising results with dacron have been achieved. Such tendons have an application in the shoulder prostheses for example.

**Evaluation of Orthopedic Implants:** Dr. Jorge Pavon, Orthopedic Fellow, and Dr. Allan Weinstein from Brooklyn Polytechnic have been methodically studying all implants removed over a two-year period, and are quantifying the various factors involved.

**Joint Lubrication:** Efforts are now being made to synthesize a similar lubricant to synovial fluid for possible use in the body, and for laboratory experiments. Rheology, friction and wear, and scanning electron microscopy are being used. Tom Gruen, a masters graduate from Columbia, is working in these areas.

#### **EVELYN SHARP LABORATORIES FOR NUCLEAR MEDICINE**

**G. C. H. Bauer, M.D., and L. Blau, Ph.D.**

Advancements in this area during 1969, in summary, are the development of mathematical algorithms which transform the observed distribution for a point source of any detectable energy into the REAL distribution consisting of the test point source with all other scan positions within background statistics. This would be the case if a collimator of ideal characteristics were used.

This is an idealized situation in diagnostic scintimetry, for the probability is quite small that the radioisotope distribution is simply a point source and indeed even less probable that it is located at one of the scan positions. However, since the effective volume at which the sensitivity of the collimator is 90 percent (of ideal resolution) is a sphere of radius  $\frac{1}{8}$  inches, and since 90 percent represents the statistical limits of accuracy for a typical transformation, a technique has actually been



developed for locating distributions of this volume in three dimensions by the use of a scanner with an upper and lower collimator-detecting system. Therefore, if scintimetry were performed at 1/8 inch increments and the attenuation of the medium were properly treated, three-dimensional location of radioisotope deposition would be possible.

Work is now in progress to expand these theories to cover an arbitrary distribution of radionuclides.

During 1969, a total of 743 scintimetries were done using <sup>85</sup>Sr and <sup>18</sup>F for clinical evaluation and diagnosis of various bone and joint diseases (Table 1). Approximately half of these had a diagnosis of osteoarthritis of the knee.

TABLE 1

	Osteo- necrosis	Osteo- arthritis	Paget's Disease	Tumors	Fractures
Knee	4.0	46.0	1.5	1.5	1.0
Hip	6.7	20.0	1.5	1.5	1.3
Spine					
Pelvis		6.7	1.0	3.3	4.0
*Total	10.7	72.7	4.0	6.3	6.3

Percentage of Patients Seen and the Types of Diseases Treated During the Year

\*743

Dr. Walther Bohne, together with Dr. Georges Muheim, completed his previous work on spontaneous osteonecrosis and its progression in fifty-two knees and found that thirteen of fifteen knees followed between two and twenty-three years after onset developed arthrosis. It was concluded that the prognosis was based on the size of the radiolucency and the focality of the lesion as determined by scintimetry. Dr. Bohne is now continuing in the further investigation of the "Natural History of Osteoarthritis of the Knee" from various other points of view, including age, sex and race.

Dr. William Crutchlow completed the study

on the analysis of scintimetry of the hip with osteoarthritis and osteonecrosis with special reference to the early diagnosis of these diseases and to the relationship of their scintimetry pattern with the radiographic changes. Dr. Crutchlow also followed up cases of renal osteodystrophy after kidney transplantation, with particular emphasis on musculoskeletal complications of renal transplant. <sup>85</sup>Sr was found to be especially useful in distinguishing true arthropathies from other causes of pain.

Dr. Tomihisa Koshino followed up cases of high tibial osteotomy for osteoarthritis and osteonecrosis of the knee with <sup>85</sup>Sr scintimetry studies. The knees were scanned one year after surgery and were found to have extremely higher values along the line of osteotomy, especially more in the side of weight-bearing pressure; medial in varus and lateral in valgus post-operative position of the knees (Fig. 4). Dr. Nitranjan Singh Ranawat also investigated the values along the joint lines of the osteotomized knees to observe the changes of osteoarthritis after correction of deformities.

Dr. Joseph DeFiore and Dr. Nitranjan Singh Ranawat continued and completed the study on scintimetry of the spine in 123 patients with osteoarthritis, compression fractures, metastatic disease, spondylitis and Paget's Disease. This method was concluded to be valuable in differentiation between recent compression fracture and older ones, evaluation of compression fractures secondary to pathological processes other than osteoporosis, detection of occult metastases to the spine, evaluation of the activity of a spondylitic focus and differentiation between spondylarthrosis and specific disease entities.

Finally, a new method of scintimetry was investigated using <sup>18</sup>F by Dr. Georges Muheim and Dr. William Crutchlow. This method could make it possible to obtain the results of scintimetry 4 hours after injection as compared with 14 days after <sup>85</sup>Sr.

## LABORATORY FOR COMPARATIVE ORTHOPEDICS

T. Koshino, M.D.

During 1969, studies on the etiology of congenital dislocations of the hip and Legg Perthes disease were continued by Drs. P.-O. Gustaffson and H. Kasström.

Dr. T. Koshino completed the study on normal and estrogen-induced appearance of femoral head ossification centers in the rat. Appearance of the ossification center was determined by microradiogram after sacrifice of the animals. The animals were injected subcutaneously with 5 gamma/gm-body weight of estrogen every other day from the day of birth. The appearance of the ossification center was found to be more advanced in females than in males, more in the estrogen treated than in the untreated. At age 21 days the ossification centers of the femoral heads were noted in eleven of forty-six males and in twenty-four of thirty-five females. In estrogen-treated groups, the ossification centers were observed in seventeen of twenty-four males and in fifteen of seventeen females at age 21 days.

This study was further investigated, combined with hypophysectomy at age 14 days. The appearance of the ossification centers was observed to be less advanced in the hypophysectomized than in the pituitary intact animals, even with estrogen treatment. The pituitary hormone may accelerate the appearance of ossification centers in the femoral heads together with estrogen.

S.-E. Olsson, V.M.D., Ph.D., M.D.

In June the program of studies on canine hip dysplasia was transferred to Stockholm and continued there under the direction of Dr. Sten-Erik Olsson and under the auspices of the Hospital for Special Surgery. In addition to Dr. Olsson, the following investigators, both here and abroad, have been working on this

project: Dr. P.-O. Gustafsson, Dr. H. Kasström, Dr. C. Beling, Dr. T. Koshino, and Dr. K. Suzuki.

It was shown that estradiol benzoate induces not only hip dysplasia but also other drastic skeletal changes in Greyhounds. Dogs of this breed which are free of spontaneous hip dysplasia reacted more strongly to estradiol than dogs of breeds previously employed in experiments of this kind. All skeletal changes such as micrognathia, bowing of long bones and change in size of epiphyses could be related to estradiol induced retardation of cartilagenous growth and promotion of ossification of cartilage. Dogs given estradiol became stunted in growth but their skeletal age was more advanced than their chronological age.

On the basis of findings in the above study and on estradiol experiments in the Beagle it was concluded that pathogenesis of congenital luxation of the hip (hip dysplasia) is the following: by retarding growth of cartilage, estradiol effects the entire skeleton. The hip joint is the only joint in the body in which these changes give rise to severe alteration of the mechanics. The reason for this is apparently the unique anatomy of the hip, being the only joint in the body without complete horizontal support of a distal joint surface in weight bearing. Incongruence between the ball (femoral head) and the socket (acetabulum) leads to subluxation in weight bearing. This subluxation initiates a vicious circle of remodeling—malfitting—increased subluxation.

The growth pattern of the acetabulum is complex. The acetabulum is formed by four bones all of different shape and with different growth and ossification centers. A disturbance of normal growth leads to a flatter acetabulum rather than to a smaller acetabulum. When the acetabulum becomes flatter and the growth of the femoral head is retarded at the same time, joint instability

occurs and the vicious circle of hip dysplasia is initiated.

It was shown that estradiol given to pregnant bitches in very small doses during the last trimester of pregnancy induces changes in the puppies. These changes were similar to those seen in puppies given estradiol postnatally. There was, however, one exception. Instead of promoting the appearance of ossification centers, ossification is delayed in puppies treated prenatally. This difference in action of estradiol given pre- and postnatally remains to be explained.

The effect of estradiol is a direct counteraction of growth hormone in the growth zone of epiphyseal plates and joint cartilage. This was shown on hypophysectomized rats with and without administration of growth hormone. Autoradiography using tritiated thymidine was used to show that the number of cartilage cells accumulating DNA for mitosis decreased under the influence of estradiol.

It was found that German Shepherds with spontaneous hip dysplasia showed a delay of the appearance of ossification centers in comparison with German Shepherds without hip dysplasia. Regardless of hip dysplasia status, German Shepherds were slower to develop ossification centers than Greyhounds. German Shepherds were also found to have bones of lower density than Greyhounds.

Beagles given estradiol prenatally developed all the characteristics of dysplastic German Shepherds. Because of the sensitivity to estradiol, Greyhounds could not be given estradiol prenatally and thus they could not be used for this kind of comparison.

During the study of hip dysplasia, observations were made concerning the development of the distal femoral condyles. In Beagles it was observed that luxation of the patella occurred because of poor development of the condyles resulting in a very shallow patellar groove. Other changes noted were

coxa vara, anteversion of the femoral neck, and bowing of the femoral shaft. These deformities of the femur in the test dogs developed without concomitant patellar luxation or prior to its occurrence. In all dogs given estradiol, the low condyles made the patella easy to luxate passively. The experiment indicated that low femoral condyles, viz. a shallow patellar groove, is primary, not secondary in the pathogenesis of patellar luxation. Once patellar luxation is established, the mechanics of the hind limb is altered. A vicious circle is started, making the deformities of the femur more pronounced and the patellar luxation more severe.





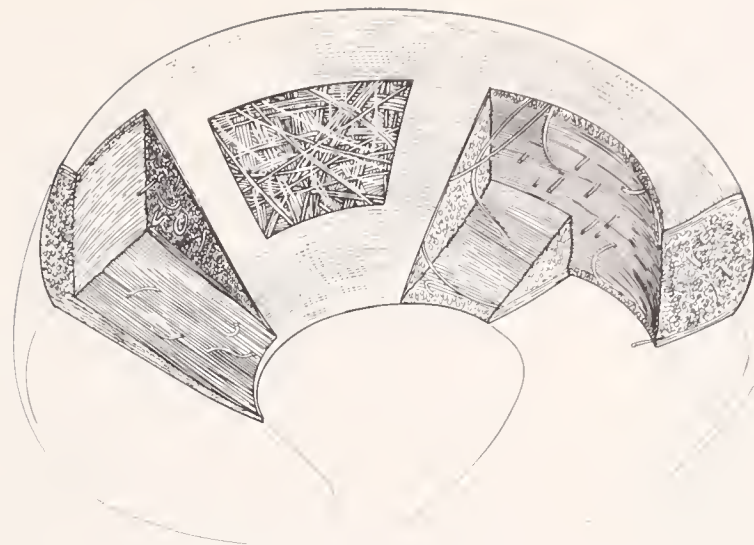


FIG. 1

Three dimensional reconstruction of the fiber pattern of the meniscus of the knee.

FIG. 2.

Immuno-electrophoretic pattern showing the greater susceptibility of bone alkaline phosphatase to neuraminidase digestion.

Top to bottom:

1. Bone alkaline phosphatase.
2. Bone alkaline phosphatase after short digestion with neuraminidase.
3. Liver alkaline phosphatase.
4. Liver alkaline phosphatase after short digestion with neuraminidase.

Antiserum: anti bone alkaline phosphatase serum. Anode is to the left.

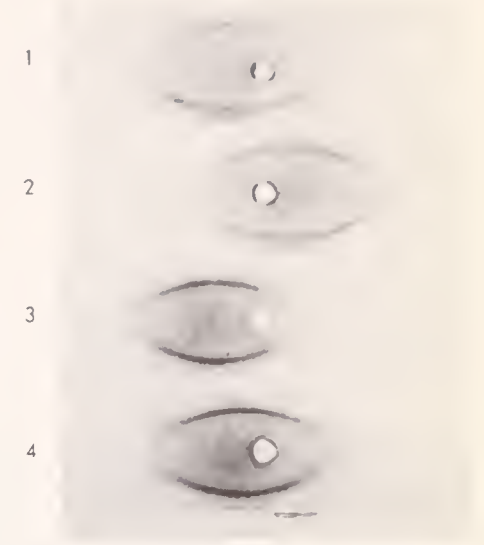


Fig 1

Fig 2

FIG. 3

Gel filtration chromatography of the structural protein of the lysosomal membrane on a column containing sephadex G-50. The relative positions of albumin (1), myoglobin (2), and cytochrome C (3) are shown by arrows.

FIG. 4

Location of the highest uptakes of  $^{85}\text{Sr}$  at the site of osteotomy in 27 knees. Solid circle, open circles and triangles represent adequately-corrected, overcorrected and undercorrected cases respectively.

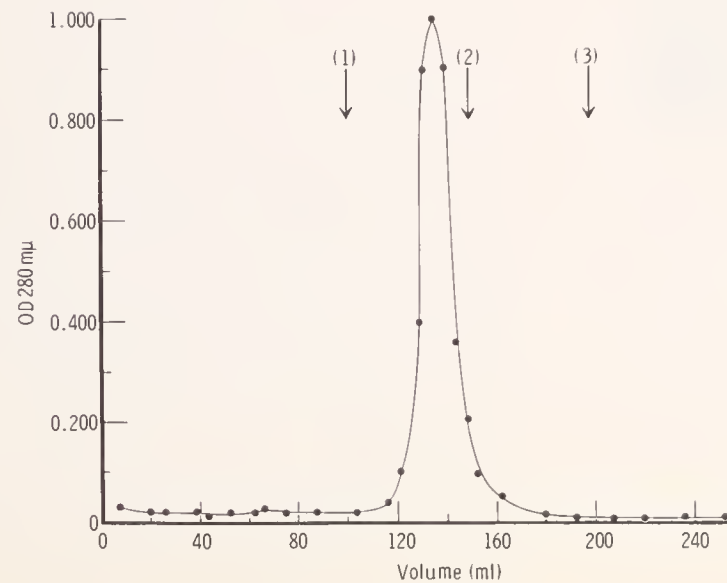


Fig 3

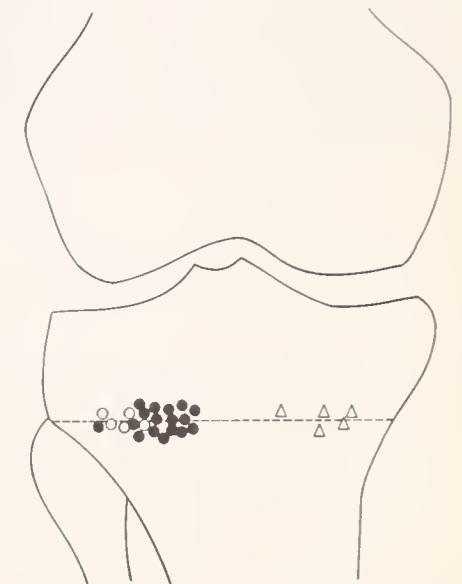


Fig 4



## Report of the Administrative Vice President

### T. GORDON YOUNG

The year 1969 was one of mixed blessings for HSS, as I suppose most years are. We look back on it with pride in our achievement, with sorrow for losses suffered, with amusement at some of the incidents that are always part of the life of a great hospital. We also look back with the sure knowledge that we advanced, not only in our service to patients, but in our preparation to increase that service in the future.

This was a year in which we took stock of our resources, found weak spots and strengthened them, made structural improvements, purchased necessary equipment, paused now and then for a moment of fun, encountered emergencies and met them head-on.

We rendered 61,093 patient days in 1969, as against 62,098 in 1968. The latter was, of course, a banner year. This is a decrease of 1,005 patient days. The 1969 average daily census was 167, compared with 170 in 1968, and we had 82.5% occupancy as compared with 83.49 in 1968. Average length of stay, which had been steady at 20 in the last two years, was reduced to 18 days in 1969.

Clinic visits, which had fallen off sharply in 1968, rose to 36,382 in 1969 — an increase of 1,208.

Hospital operations in 1969 resulted in a loss of \$670,455 after depreciation, as compared with a loss of \$406,156 in 1968. Costs in 1969 climbed another 18% to \$9,526,009, and, although we increased our room and care charges substantially during the year in an attempt to improve income, we were unable to affect all of this cost increase. Fortunately, the annual rate of increase in operating expense, which we have been experiencing since 1966,

appears now to be leveling off, after having doubled our costs in five years.

Our 1969 operating results were also adversely affected by a decrease in the number of patient days rendered and by a general tightening up of third party reimbursement during the year. The New York Legislature enacted a comprehensive hospital cost control law at its 1969 session, which, among other things, for the first time will bring Blue Cross reimbursement rates to hospitals under the jurisdiction and control of the State Department of Health. The full impact of this legislation will not be felt until 1970, but we were affected in 1969 by a State Medicaid rate freeze which went into effect on April 1st, and by a reduction of 2% on Medicare reimbursement by the Federal Government on July 1st.

Despite our higher hospital loss in 1969, we were able to continue partial funding of depreciation to the extent of \$240,000. Our cash flow from hospital operations was satisfactory, but we continue to be handicapped by the long delay encountered in the final settlement of Blue Cross and Medicare accounts, where 1966, 1967, and 1968, as well as 1969, remain open.

Research operations during 1969 were conducted at a break-even point, without depreciation, despite cut-backs in certain of our Federal grants. Net operating income from investments and donations increased in 1969 to \$427,896 from \$420,131 in 1968, but this income fell far short of overcoming our operating deficit.

A major improvement in our accounting procedures was made during 1969 in consolidating the accounting functions previously performed by the United States Trust Company with those maintained at the Hospital. This will lead to improved control in our total financial planning. In another area, we participated with the United Hospital Fund in the development of a uniform computerized



patient statistics report for hospitals, which furnishes us comprehensive patient information valuable in planning for the future.

Special Surgery took a 10% participation, with other institutions in the Cornell Center, in the purchase during 1969 for staff housing of a 500-unit apartment complex at 63rd Street and York Avenue, known as Sutton House. Our share of the cost after assuming existing mortgages was \$814,089. This investment will be carried in our Investment Fund. On our apartment house at 310 East 71st Street, which we purchased in 1968, we have succeeded in obtaining 72% tax exemption, based on the occupancy of the building by our employees, thus eliminating most of our building operation deficit.

Looking ahead into 1970, we anticipate higher operating losses as new and more restrictive formulas for reimbursement become effective. Over the past three years we have, however, developed sophisticated methods of cost accounting and will be better able to pin-point trouble spots as cost control takes on increasing importance.

HSS has been accredited by the Joint Commission on Accreditation of Hospitals for a period of three years, or until a subsequent survey is conducted. This is the result of the evaluation conducted in November by Dr. William W. Pierce. The Board of Commissioners made various recommendations and commended the Medical Staff and Administration for "the evidence shown of quality care given in this Hospital."

We are proceeding with our plans for Second Century Development construction. In the face of financial problems this may seem to be a contradictory action. It is not. A hospital, like any other institution, must go forward, constantly striving for quality service to its patients, or it will slip backward. We must anticipate future needs, keep pace with accelerating scientific developments, and provide those modern facilities that constitute

the equipment with which a doctor functions and which, therefore, enable us to attract and hold the finest medical staff.

Construction is scheduled to begin in the Spring on the first phase of our Second Century Development Program. High on the list of priorities are air conditioning of patient rooms, and installation of an emergency generator. The generator will be installed in the Research Building to serve key areas of the Hospital in the event of another power failure.

Next on the program will be the addition of two floors of clinical laboratories on the Research Building, the expansion of X-Ray facilities, and modernization of the kitchen for central tray service.

#### **Personnel Relations**

We began the year by extending to all Society retirees the opportunity to continue their group health insurance, free, for themselves and their spouses in their retirement years. This benefit was significant to those people who, living on fixed incomes, are particularly subject to the disadvantages of an inflationary economy.

Attracting dedicated and skilled employees is an ongoing concern of ours. Each advance in medical science brings an accompanying need for more and better trained supportive staff. In an effort to meet this need, we participated with 3 other voluntary hospitals in a joint advertising campaign to recruit young people to hospital careers. Some of our current employees served as photographer's models and soon found themselves to be celebrities, with their pictures in the newspaper.

Another approach was directed to neighborhood residents. A flyer was mailed out in September pointing out the advantages of '... walking to work.' We trust that these and other efforts will continue to keep Special Surgery staffed with employees to be proud of.

In October, when Blue Cross announced

rate increases for group subscribers averaging 43%, we absorbed the higher premium costs in order to continue to provide each active employee with free Blue Cross, Blue Shield and Major Medical health insurance.

On June 10th, the Hospital held its annual dinner to honor the Fifteen-Twenty-Five Year Club. A 25-year pin was awarded to Dr. Richard Freyberg, Rheumatic Diseases. Fifteen-year pins went to Mrs. Thelma Bristow and Mrs. Alberta Lewis, Nursing; Mr. Randolph Burrison and Mrs. Claire Pellich, Dietary; Miss Esther Melamed, Occupational Therapy; Miss Irene Poggi and Miss Marjorie Walker, Medical Records; and Miss Margaret Ryan, Social Service.

One of our major 1969 accomplishments in Personnel was the publication of a revised Employee Handbook, "You And Special Surgery," an attractive and informative manual of personnel policies and services, featuring pictures of employees in work situations.

In the Fall, we began the task of refurbishing our Employee Locker Rooms, untouched since 1955.

One hundred and eleven employees and six physicians participated in our annual blood drive.

#### **Staff Changes**

Turnover for HSS was down slightly in 1969. Five staff members retired: Mrs. Hildegard Berney and Mrs. Frances Krug, Accounting; Miss Eva Brewer, LPN; Harold Sullivan, Engineering, and Miss Lillian Zottman, R.N. Two staff members died: Mrs. Norma (Van) Bender, Laboratory Supervisor; Miss Marian Campbell, Physical Therapist. Four retirees died during the year: Miss E. Louise Barry, R.N.; Daniel Bohleber, Purchasing; Frank Joyner and Mrs. Sadie Lewis, Building Service.

#### **Social Events**

Every institution must have occasional moments of relaxation and pleasure. Ours

usually are combined with the raising of funds or medical meetings, and therefore mean work for someone and pleasure for the rest of us. But the results are gratifying.

Our ballet benefit, "Romeo and Juliet," danced by Dame Margot Fonteyn and Rudolf Nureyev, gave staff and friends an enjoyable evening and enabled Mrs. Edwin I. Hilson, Vice President, to announce a \$62,444.39 profit for the Hospital.

The Rebecca Witherell Boatride around Manhattan, eagerly anticipated each year, took place on June 21st with patients, employees, and friends enjoying this event, provided for by a bequest from one of HSS's donors.

Social events were held in connection with Alumni Day, when doctors were guests for luncheon on two days and for a cocktail party that closed the event.

There were also 123 for luncheon at the LPN Alumni Day in May.

And the year ended, as it always does, with the gayest parties of all — Christmas festivities for the children.

The Hospital's Basketball Team participated with the other Voluntary hospitals in the League games. Mr. Edward Marigney of Pharmacy was responsible for the acclaim that our team has attained in the City.

### Plant Changes

During 1969, extensive replacement of lighting was undertaken in patient rooms, corridors and nursing stations. A new and more sophisticated radiographic unit was installed in X-Ray Room #4, replacing an obsolete unit dating back to 1954.

Five South was renovated to accommodate teenagers as well as pediatric patients and accordingly, Five North became available for adult patients. An improved smoke detection system was installed in four patient areas and tied in with the elevators.

Equipment purchased included 1

cardioverter and 3 defibrillators.

The Gift Shop was remodeled by the Women's Auxiliary.

Room 652 was converted from a medical conference room into a five-bed admission unit. The Splint Room was renovated and given improved access to the 4th Floor corridor.

Locker space was increased in the O.R. doctor's locker room.

The Home Care Office was relocated to make space for the Pre-Admissions Testing Office adjacent to the Admissions Office.

### Special — but Unscheduled — Events

The year began and ended with a couple of those emergencies that are interesting, and, in part, funny — only after they are past. In between, we had a sort of running emergency period with Con Edison. But back to January...

The Big Snow affected HSS like no other emergency we've encountered during my years here. We have had power failures, transportation strikes, Hong Kong Flu, and other snow storms, but this was the champion of them all.

We ran over 60% absenteeism in many departments. When I checked with the Dietary Department on the first morning, I was given the glad tidings that we had two employees there to feed 170 people plus staff of the Hospital.

Night and day nurses who live nearby were kind enough to fill the breach. We dished out food on paper plates and the picnic atmosphere was taken in good spirit by the patients.

Food deliveries were off — we received no milk or vegetables the first day but fortunately our meat and bread men beat a path to our door.

The spirit of those employees who were able to come in was heart-warming and greatly appreciated. They volunteered to assist wherever needed, and with much juggling of

personnel to staff those departments which had to function, such as the operating rooms, laboratory, nursing and telephones, things proceeded fairly smoothly.

In using disposables, we had still another problem. The increased difficulty of snow removal caused the Department of Sanitation to curtail refuse clearance and instead of our usual three daily dumpster pickups, we had none. The New York Hospital incinerator came to our rescue, but this meant, of course, that we had to bundle up our refuse and waltz it over — which we did. Eventually the snows melted.

Between June and September, we had five instances of low voltage, affecting our lighting, air conditioning, elevators, dumb waiters, and everything else depending on electricity. Con Ed expressed regrets, but we decided to put our faith in an emergency generator.

The last day of the year brought us the threat of a transit strike. On other such occasions, the Hospital has made rather elaborate plans for such an eventuality, but they were costly. In 1967, we pooled our efforts with Memorial and New York Hospitals, but in this crisis we were forced to develop our own.

Despite the fact that we shall all have to make a careful distinction during 1970 between the "must's" and the "maybe's", our Hospital is ready to maintain the service to suffering people that has elevated it year by year to the position of one of the world's great specialty hospitals.

No one within the walls of this institution will ever forget that 1969 was the year of our great loss in the death of Dr. Philip D. Wilson, Sr. We, who for many years had the counsel and warm-hearted help which he gave so generously to everyone, feel an obligation to his memory, and we know we can best discharge it by carrying forward in the years ahead the hopes and ambitions he had for our Hospital.







### Report of the Director of Nursing D. DEAN SMITH, R.N.

The Nursing Service at the Hospital is committed to the policy of encouraging education as the best means of constantly improving the care of patients.

Ten registered nurses from our R.N. Scholarship Program returned to the Hospital. As of the end of the year, 13 students remained in the program. Two instructors, under our Scholarship Program for Graduate Registered Nurses, obtained their B.S. degrees from the University of Pennsylvania, and returned to us. One registered nurse has remained in this program at Fairleigh Dickinson University. We have ten registered nurses who are attending evening classes to earn credit towards their B.S. degrees. Tuition-free scholarships were granted to three students who entered our School of Practical Nursing, and we gave financial aid to three other students for living expenses.

Other educational programs included an eight-week course given to all head nurses and instructors in "Problem Solving Techniques", a six-week course for personnel in the Central Service Department, and two courses given in conjunction with the American Red Cross.

The Red Cross "Nurse Planning Committee" invited two graduates of our School of Practical Nursing to sit on the committee. These graduates assisted in planning the role of the practical nurse in community teaching of Mothers' Classes and Home Nursing. We scheduled classes here at the Hospital for the instructors who were selected practical nurse graduates of our school. They, in turn, started classes in Harlem for members of the community and are still teaching.

In-service education classes were given to the Red Cross Junior Volunteers in bed-making

and other patient services by our in-service education instructor, and they have participated in the daily activities of the patient units.

In June, Lenox Hill Hospital withdrew from our affiliating agreement in providing clinical experiences for our students. We continued our affiliation with New York Hospital and limited the size of our classes.

During 1969, we admitted 53 students, and graduated 36. In the past two years, the attrition rate has averaged about 47%. We have maintained a faculty of seven full-time instructors and one part-time nutrition instructor.

The results of the New York State Board Examinations have been excellent. Of the 24 students who took the examinations, 23 passed. The New York State mean was 463 and that of our Hospital was 547.

The Mary Immaculate Hospital School of Nursing sends its senior students for clinical experience in the care of patients with long-term illness.

Our faculty continues to revise and design curriculum changes to simplify and better coordinate the learning experiences for the students.

Supervisory personnel in the Operating Room, Recovery Room and Central Supply, as well as the Director of Nursing, have been actively involved in the planning and redesigning of the proposed Operating Room Suite. The opportunity to plan with the architects, doctors and administration has established excellent relationships and channels of communication.

During the year, several changes in services and procedures were made. Central Supply relinquished the purchasing and storage of items required by departments other than nursing, to the Receiving Department, assumed the packaging and sterilization of instruments and equipment from the Operating Room. It processes and sterilizes



equipment needed for other departments. A medium-sized sterilizer was purchased because of increased activities. Nursing personnel were given a six-week course in Central Supply, including microbiology, basic principles of aseptic technique packaging and sterilizing.

The Splint Room was completely remodeled, and overhead traction was purchased for all beds, thus eliminating storage problems and adding greatly to the comfort of the patients. The title "Nurse's Aide" was changed to "Central Service Technician".

The Clinic nursing staff was expanded to provide more comprehensive care, and nurses were assigned permanently to each clinic to provide continuity of care. An orientation program for all new patients was revised and so reinforced as to inform patients of hospital policy and geographic layout and to introduce them to the nurses in the respective clinics. A checklist was devised to inform the nurse of tests and procedures ordered. The nurse reviews the checklist with the patient, thus again providing a more personal approach.

Patient coverage in quality and quantity is a pressing concern. Ten returning registered nurses from our Scholarship Program have lifted the morale of the staff and have provided registered nurse coverage on all three shifts and in the special clinical areas.

Turnover for 1969 was 36% compared to 43.9% in 1968. The Dietary Department has taken over the serving of trays. Full-time floor clerks cover each unit during the day shift. Four part-time clerks cover two units at a time during the evening shift. Each nursing unit is stocked twice weekly with supplies from the Receiving Department.

Nursing Staff in January, 1969, as compared with January, 1968, was as follows:



	January, 1969	January, 1968
R.N.'s . . . . .	83	73
L.P.N.'s . . . . .	80	84
Non-Prof. . . . .	83	99
	<u>246</u>	<u>256</u>

The Director of Nursing or her representative participates in the major committee activities

of the Hospital, all of which have a direct relationship to patient care.

The Nursing Service lost, through the death of Dr. Philip D. Wilson, Sr., one of its most constant and helpful friends. We miss him, but we will do our best to continue our part in perpetuating the spirit with which he imbued this Hospital.

## Report of the Director of Social Service

MARGARET M. RYAN, C.S.W.

The Social Service Department is able to handle the number of cases presented to it because of the commitment of its workers.

Mrs. Alice Woo, an experienced worker, became Administrative Supervisor assisting the Director in the management of the department, and supervision of three graduate workers. Her judgment and dependability together with her desire to serve the department are tremendous assets. The employment of Miss Anne Craig as Casework Supervisor can only enhance the professionalism of the department. She brings with her years of practice in medical social work and supervision, a genuine regard for the dignity of the patient, the aims and objectives of social work and a desire to serve the Hospital.

Shortages of personnel in the field of professional social work continue and for this and reasons personal or private, the turnover of caseworkers persisted in 1969. Three new caseworkers, one of whom is a hospital scholarship recipient, joined the staff since June to replace those who retired or changed positions.

The first year of Social Service recording into the medical charts has now been completed and is considered to have been successful and well received. Social histories obtained from patients, or parents of children prior to admission together with the workers' case work goals for the patient, are recorded on Social Service green sheets and made ready to be placed in the chart on the date of admission. This pre-operative information alerts the doctors to the existence of social problems which might interfere with early hospital discharge. Follow-up notes are handwritten while the patient is in the

Hospital and summarized at the time of discharge. These notes become a permanent part of the medical chart. We believe this method has improved and augmented communication among the para-medical staff for the benefit of the patient.

In the Spring, the appointment of David Clayson, Ph.D., psychologist, to the Hospital staff was an added benefit to the department's weekly conferences with Dr. Brown, the psychiatrist. The ultimate beneficiary of the conferences is the patient. The social workers assigned to adolescent and young adult patients are now assisting with psychological and intelligence testing, the results of which supply quite an inclusive picture of the patient and his personality. Through these, the para-medical staff can be alerted to the possibility of unusual behavior and this additional knowledge, with understanding of the patient can help to diminish the trauma of hospitalization.

One of the graduate students assigned to our department in October 1968 withdrew at midterm, but the other student completed her year of field work. In the Fall, we accepted two second-year graduate students.

The two-year scholarship for social work graduate school for 1970-71 was awarded to Mrs. Penelope Young Hellman, whose commitment to the department will extend from 1971 to 1973. The \$4,000.00 annual scholarship is contributed by the Women's Auxiliary of the Hospital and provides an excellent source of staff recruitment.

Summer camp vacations were provided for 108 patients at eight different facilities. Southampton Fresh Air Home continues to accept the greatest number for the longest period of time and the improvements and additions to the camp have increased the opportunities for a most delightful eight weeks experience for the children.

The time consuming job of preparing camp applications and assisting the doctor



during pre-camp medical examinations was ably handled by the volunteers of the Social Service Committee during April. This assistance is most appreciated by the department social workers.

1,274 new patients and 12,450 revisit patients were serviced by the Social Service staff during the year, some intensively and others for immediate and concrete needs. The referral of private cases by individual physicians has increased, and this year numbered approximately one hundred ten.

The technical and financial problems of transportation of clinic patients have not lessened, but the assignment of this task to our competent secretarial staff has resulted in a more orderly and efficient system, and relieved the case workers of a tedious clerical chore.

Many of the problems accompanying a large number of patients are solved only with the assistance of others — the consideration of the professional staff, guided by Dr. Robert L. Patterson, Jr., Surgeon-in-Chief; the concern of Administration under Mr. T. Gordon Young; the support of the Women's Auxiliary directed by Mrs. Walter J. Fried, and the willing help of the Social Service Committee under the chairmanship of Mrs. Robert Patterson, Jr. To all we extend our sincere gratitude.



## Report of the Chairman of The Women's Auxiliary

**BRITA DIGBY FRIED**

The year 1969 was one of accomplishment for the Auxiliary. We were successful in the United Hospital Fund campaign and once more our total for Box Week was the highest of any hospital in New York. Mrs. David Reuter was our campaign chairman and Mrs. Eugene Lance was in charge of Box Week, assisted by Mrs. T. Campbell Thompson, who, although recuperating from surgery, manned the telephone from her apartment. I am delighted that these three ladies will serve again in 1970.

We have enjoyed interesting and informative talks by doctors and members of the hospital staff and are extremely grateful for the opportunity to learn of their accomplishments.

The Auxiliary made donations for Christmas presents to service patients and also provided funds for Christmas dinners for patients from the clinic. We are grateful to Mrs. David Reuter for her hard work on this project.

### **Volunteers — Mrs. Newcombe Cole**

The Volunteer Committee consists of active volunteers from the recreation department, the Cerebral Palsy, Clinic, X-Ray, Admitting, Patients' Library, Gift Shop and evening volunteers. The committee meets with Miss Roberts, the director of volunteers and is of great value to the department and the Hospital. The new uniform has at last materialized and will be in evidence at the volunteer lunch in April when forty volunteers will receive service awards. Notable among these are Mrs. Andre Istel who will receive a 12,000-hour bar and Mrs. Philip D. Wilson who has served for 35 years.

### **Patients' Library — Mrs. Oscar Brenner**

The library plays an important role in the life of The Hospital. It is staffed by fifteen

volunteers and a professional librarian. Book sales which are held periodically during the year made \$630.

### **United Hospital Fund — Mrs. David Reuter, Chairman; Mrs. Eugene Lance, Box Week Chairman**

Contributions for the year amounted to \$19,402.45 representing 485 gifts. The Box Week total was \$1,960.72.

### **Social Service Committee — Mrs. Robert Lee Patterson, Jr., Chairman**

The members of the Social Service Committee were occupied with processing applications and physical examinations for children who planned to attend summer camps. Fifty-six disabled children went to the Southampton Fresh Air Camp and fifty-three to other camps. The hospital has for some years given a scholarship of \$3,000 annually to students at schools of social work. In return the recipients agree to work for at least two years in the department.

### **Membership Committee — Mrs. Philip D. Wilson, Chairman**

The Auxiliary welcomed two new members in 1969 — Mrs. Walter Niklaus in October and Mrs. Edward Farley in November. The Auxiliary now has 38 members, 29 active and 9 contributing.

### **Gift Shop — Mrs. Sidney Voice, Mrs. Robert I. Powell, Co-chairman**

We are very proud of our redecorated gift shop which has enjoyed a most successful year. The lively atmosphere created by Mrs. Frances Hage, the manager, who is assisted by a hard-working and enthusiastic committee, is a great addition to the life of the Hospital.

The Christmas sale which took place on November 20th and 21st was most popular

and successful, and was patronized by friends of the hospital in addition to members of the staff and personnel. The attractive wrapping was a big factor in the success of the sale.

### **Occupational Therapy — Mrs. David Reuter, Chairman**

The Christmas sale in the occupational therapy department netted \$1,081.75 including the sale of chances on jewelry donated by a former patient and a pocket book given by Mrs. Robert Geller.

I would like to thank the members of the Auxiliary for their enthusiastic support, our Treasurer, Mrs. Robert Freiburger for her highly efficient attention to our finances, Miss Margaret Ryan and Miss Virginia Roberts for their unfailing help and Mr. Young for his continued interest and advice.



## VOLUNTEER DEPARTMENT — 1969 STATISTICS

Total Hours                    21,340  
Total Volunteers                201

### Data on volunteers:

101 New volunteers processed  
140 Daytime volunteers  
61 Evening and weekend volunteers  
    (including Chaplaincy vols.)  
146 Senior volunteers            19,573 hours  
55 Junior volunteers            1,767 hours  
8 Men and boy volunteers       918 hours

### Individual volunteer hours during 1969:

150-300 hours                    38 volunteers  
300-500 hours                    13 volunteers  
500-900 hours                    4 volunteers  
over 1,000 hours                1 volunteer  
   56 volunteers  
   gave over 150 hours each

### Length of service through 1969:

2- 5 years                         33 volunteers  
5-10 years                         20 volunteers  
10-15 years                        7 volunteers  
15-20 years                        10 volunteers  
20-35 years                        8 volunteers  
   78 volunteers  
(39%) have served for over 2 years

### 1969 Awards:

50 volunteers will receive awards for service  
    through 1969  
14 volunteers are on the permanent Honor  
    Awardee list for having given over 4,000  
    hours of service  
8 of the above 14 will receive awards this year  
1 of the above 14 — Mrs. Andre Istel —  
    will receive a 12,000 hour bar







## THE HOSPITAL FOR SPECIAL SURGERY VOLUNTEERS—1969

### 30 YEARS AND OVER

Mrs. Philip D. Wilson

### 25 YEARS AND OVER

Mrs. Benjamin Lorber

Mrs. Willis Phillips

Mrs. David Rentz

### 20 YEARS AND OVER

Mrs. Charles S. Bannerman

Mrs. Oscar Brenner

Mrs. André Istel

Mrs. Norma S. Wurzbarger

### 15 YEARS AND OVER

Mrs. Newcomb D. Cole

Mrs. O. Vaughn Dennis

Mrs. Robert Geller

Mrs. Saul Goldstein

Mrs. Albert Kinney

Mrs. Henry Numrich

Mrs. David Reuter

Mrs. John D. Sloane

Mrs. Earl VanDerwerker

Mrs. Armitage Watkins

### 10 YEARS AND OVER

Mrs. Ivor Bevan

Mrs. J. Howard Denny

Mrs. Charles Deyo

Mrs. Max H. Friedman

Mrs. Hugh J. Howell

Mrs. Raphael Meisels

Mrs. Robert Lee Patterson, Jr.

### 5 YEARS AND OVER

Mrs. William Arnold

Mrs. Jay Bresler

Mrs. Carl E. Fowler

Mrs. Robert Freiburger

Mrs. Rube Goldberg

Mrs. Ide K. Halpern

Mrs. Robert Kohns

Mrs. Ida Levine

Mrs. Murray Mandel

Mrs. Edward Millstein

Miss Esther Murrell

Mrs. Walter Niklaus

Mrs. William E. Parsley

Miss Molly Rosenthal

Miss Yolande Salzat

Mrs. Lee Ramsay Straub

Mrs. Robert Warren

Mrs. Alfred Wiener

Mrs. Paul Wolf

Miss. Elisabeth Wurzburger

### UNDER 5 YEARS

Mrs. Robert Abelow

Mrs. Alma Askin

Mrs. Willis H. Bardwell

Miss Susan Barnes

Mrs. Paul Baudry

Mrs. Ted Berk

Mrs. Sidney Berman

Miss Elisa Bernardi

Miss Gloria Bienenstock

Mrs. Sidney Blue

Miss Mia Brandt

Miss Bonnie Brooks

Miss Johanna Browne

Miss Lynne Calman

Miss Cheryl Carberry

Miss Emily Carnahan

Miss Margaret Carney

Miss Antoinette Carter

Miss Eileen Clancy

Mr. Benjamin Cohen

Mrs. Jerome Cohen

Miss Denise Coiro

Miss Virginia Cooke

Miss Marina Cortez

Miss Linda Cucinotta

Mrs. Frank X. D'Andrea

Miss Rosetta Darraugh

Mrs. Ferdinand Davis

Miss Judith deBickish

Miss Mary Del Rosario

Mr. Raphael de Moya

Miss Kathleen Dennehy

Miss Judith Dietrich

Miss Anne Marie Dorsey

Mrs. Madeleine L. Edelstein

Mrs. Edward I. Farley

Mr. Salvatore Fazio

Miss Dolores Ferris

Mrs. Olive Fischer

Miss Nancy Fisher

Miss Sally M. Fogarty

Miss Irene Foley

Miss Jane French

Miss Janice Fried

Mrs. Harry Friedman

Mrs. Lawrence N. Gahagan

Miss Anne Gardiner

Mrs. William Gaxton

Mrs. Joseph Geffen

Mr. John P. Gibbon

Miss Michael Goodman

Mrs. Charles Haight

Miss Marcia Halleran

Mrs. Siegfried Hannah

Mrs. Lisa Harper

Miss Pamela Harris

Miss Bonnie Hays

Miss Anne Henning

Miss Marguerite Henri

Miss Agnes Hickson

Miss Nancy Horvath

Mrs. John N. Insall

Miss Jessie Lee Johnson

Miss Judith C. Kaszubski

Mrs. Theodore Kaufmann

Mrs. William Kerr, Jr.

Miss Leslie E. Killip

Mrs. Juliane Koennecke

Miss Gabrielle Kopelman

Mrs. Dubie Kuba

Mrs. Harold P. Kurzman

Miss Noreen Leniston

Miss Sharleen Lenowitz

Mrs. Miriam Lewison

Mrs. Barnet Liss

Mrs. Harold S. Lyon

Miss Rose Anne McCusker

Miss Maureen McNamee

Miss Linda Maroldo

Miss Donna Massaro

Mrs. Albert Maurice

Miss Dominique Mazeaud

Miss Marsha Michael

Miss Dorothy Mihic

Miss Amy Milsted

Mr. Michael Millstone

Miss Diane Mitera

Miss Judith R. Murphy

Miss June O'Connor

Miss Norma Orjelick

Miss Adelpa Park

Mrs. P. Bell Phillips

Miss Cheryl Powell

Mrs. Robert Powell

Miss Susan Rathgeb

Miss Camille Rillo

Miss Monica Risi

Miss Eleanor Rundie

Miss Bonnie Sanowitsky

Miss Marta L. Santiago

Miss Claire M. Shanley

Miss Karen Siegel

Miss Cynthia Skiff

Miss Elizabeth Smith

Miss Sheri Smith

Miss Lorraine Speta

Mrs. Allen Jay Strouse

\*Mrs. Fred Stutz

Mr. Fred Stutz

Mr. Hugh Smith Thompson

Mrs. Carl A. Ulfers

Mrs. Sidney P. Voice

Mrs. Charles S. Warner

Miss Emily Williams

Mrs. Burr P. Wilson

Mrs. Philip D. Wilson, Jr.

\*Deceased

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## Alumni Teaching Affiliations

### United States

Albany Medical College  
 Albert Einstein Medical School  
 Arkansas, University of  
 Baylor University Medical School  
 Boston University Medical School  
 Bowman-Gray Medical School  
 California, University of  
 California, University of, at Los Angeles  
 Chicago, University of  
 Colorado, University of  
 Columbia University School of Physicians  
 and Surgeons  
 Connecticut, University of  
 Cornell University Medical College  
 Creighton University  
 George Washington University School of Medicine  
 Georgetown University Medical School  
 Hahnemann Medical School  
 Harvard University  
 Indiana University Medical School  
 Illinois, University of  
 Jefferson Medical College  
 Louisville, University of, School of Medicine  
 Maryland, University of, School of Medicine  
 Marquette University  
 Nebraska, University of, School of Medicine  
 New Jersey College of Medicine  
 New York Medical College  
 New York Polyclinic Medical School  
 New York State Medical School  
 New York, State University of, School of Medicine  
 New York University  
 Ohio University Medical School  
 Oklahoma, University of  
 Oregon, University of  
 Pennsylvania, University of  
 Pittsburgh, University of  
 Rochester, University of  
 St. Louis Medical School  
 St. Louis University School of Medicine  
 San Diego Hospital and Medical Center  
 Southern California, University of  
 Southern California, University of, Dental School  
 Southwest Texas State College  
 Stanford University Medical School  
 Temple University Medical School  
 Texas, University of

Tufts University School of Medicine  
 Tulane University  
 Utah, University of  
 Vanderbilt University School of Medicine  
 Washington University  
 Washington, University of, School of Medicine  
 Wayne State University  
 Western Reserve University Medical School  
 Yale University Medical School

### Foreign

Argentina — Buenos Aires University  
 Belgium — University of Liege  
 Canada — McGill University Medical School  
 — Meharry University  
 — Queens University  
 — University of Toronto  
 Columbia — Universidad de Antioquia, Medellin  
 France — Clinique Chirurgicale Orthédique et  
 Réparatrice, Hospital Cochin, Paris  
 — Lariboisiere Hospital  
 Hong Kong — University of Hong Kong  
 Israel — Tel-Aviv Medical School  
 Italy — Clinica Ortopedica Dell Università, Florence  
 Japan — Tokyo University  
 Korea — Yonsei University Medical College  
 Paraguay — National University of Paraguay  
 Peru — Hospital Regional Docente, Ica  
 Scotland — University of Glasgow  
 South Africa — Southland Hospital  
 — University of Witwatersand  
 South Korea — Woo Sok University Medical  
 College, Seoul  
 Switzerland — University of Zurich  
 Thailand — Medical School in Thailand  
 Venezuela — University Hospital, Caracas

## Gifts and Endowed Beds

- Agnew, A. C.  
 Agnew, Alexander McL. — in memoriam  
 Agnew, George B.  
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 Art Fund  
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 Arthritis and Rheumatism Foundation Grant  
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 Becker, Cornelia D., Fund — in memory of Mary T. Becker and Joseph Becker  
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 Bliss Fund — gift of Mrs. George Bliss  
 Bliss, George — in memory of his daughter, Netta Bolton Bliss  
 Bonnell, Florence K. — for Marie E. Hampton  
 Bowdoin, George — for the children of the Children's Aid Society  
 Brooks, Walter, Foundation Fund  
 Brown, Mrs. Ann D. — in memory of Annie V. Brown  
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 Brown, Margaret J., Orthopedic Bed  
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 Clark Film Library Fund  
 Clark, Marian de Forest — to be known as the "Julian Bouton Clark Bed"  
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 Curran, Elsie Postley — in memory of James Ross Curran  
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 Farrar, Mrs. Sarah J. — in memory of her father and mother, Horace and Sarah J. Theall  
 Field and Bishop Cortland de Peyster, and Florence Van Cortland — in memory of Mary E. de Peyster  
 Finch Henry E. — in devoted and loving memory of his father and mother, Edward L. and Annie R. Finch  
 Fraser, Mrs. Anna M. — in memory of her father and mother, Hansen K. and Emma B. Corning  
 Freligh, Mary Helen — in memory of her daughter, Helen Freligh  
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 Fund for Adult Motion Picture Entertainment  
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 Fund for Cerebral Palsy Research  
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 Harnett, Katherine I. D. — in memory of Tommie S. Donald  
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 Martin, Janie A. — in memory of Martin, Walter A.  
 Medical Library Fund  
 Mitchell, Minturn Arthur — in memory of Roland Greene and Cornella Port Mitchell  
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 Miller, Anne — in memory of Cecil Miller  
 Miller, Harriet Thompson  
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 More, Majorie Veith, Memorial Fund  
 Neute, Josephine L. — in memory of Emily P. Munn  
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 Pocher, Barbara Ellenbast — in memory of Frank Ellenbast  
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 Arthritis and Paget's Disease  
 Ranth, Joseph P. Fund for Research in Rathbone Fund (The)  
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 Reynolds, Martha S. — in memory of her mother, Ernestine Schaffner  
 Robbins, Blanche Stern  
 Roche, Edward and Ellen, Relief Foundation Fund  
 Romeyn, Hiram Radcliff — endowed by his wife, Grace W. Romeyn  
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 Russell Sage Dental Endowment Fund  
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 Schemburg Fund for Care of Crippled  
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 Seybold, Paulina — in memory of Paulina Seybold  
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 Sharp, Evelyn — Kitchen Food Supply Fund  
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 Sloane, William, Fund  
 Social Service Relief Fund  
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 Starin, Priscilla T. P. — in memory of Mary Dick Parker  
 Stern, Adele, Fund  
 Straub's, Dr., Fund for Hand Clinic  
 Sturges, Frederick M., Jr., Fund  
 Taylor, Charles Fayette, Memorial Fund





Taylor, Dr. Henry Ling — in memory of  
Charles Fayette Taylor  
Thayer, Jessica Haddington, Fund  
Thompson's, Dr., Discretionary Fund  
Thorne, Lydia Ann — in memory of  
Lydia Ann Thorne  
Thorne, Phoebe Ann  
Tillotson, Emma L. — in memory of  
Millard Glenn Tillotson  
Tindale, Robert T. — in memory of  
Tower, Joseph T. — in memory of  
Mary T. Tower

United Hospital Fund — NZB Mouse  
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deceased children, Grace Van Tine and  
Adelaide Van Tine  
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Residents' Fund  
Wainerdi's Dr., Harold R., Fund for  
Multiple Sclerosis  
Wall, W. W. — in memory of  
Louis Eugene Wall

Watson, Emily A. — in memory of  
John Watson  
Watson, Emily A. — in memory of  
Marcy L. Watson  
Watson, Emily A. — in memory of  
Mary J. Walker  
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her sister Augusta Wendel  
Wendel, Georgina G. R. — in memory of  
Josephine Wendel  
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Fund (various contributors)  
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Woolworth, Velma B., Fund — in tribute  
to the memory and generosity of  
H. Sylvia, A. H. G. Wilks and  
Ella Van E. Wendel  
Whitney, Helen Hay, Foundation Grant  
X-Ray Education Fund

1967-1968-1969

**COMPARATIVE STATISTICS**

	1969	1968	1967
Total Patient Days .....	61,095	62,098	61,505
Total Clinic Visits .....	34,394	35,174	37,253
Per Cent of Occupancy .....	82.0	83.4	84.6
Admissions .....	3,432	3,199	3,128
Orthopedic .....	3,099	2,819	2,844
Medical .....	333	380	284
Discharged .....	3,419	3,178	3,266
Deaths .....	16	27	16
Autopsies .....	10	14	10
Percent — Autopsies to Deaths .....	62.5	51.8	62.5
Laboratory Tests .....	136,448	125,177	118,685
X-Ray Films Made .....	95,689	89,780	86,911
X-Ray Examinations .....	38,753	36,844	35,301
Drug Prescriptions Filled .....	79,433	73,422	69,200
Operations .....	2,556	2,584	2,356
Average Length of Stay (Days) .....	17.9	20	20
Meals Served .....	183,291	186,294	186,335
Total Number of Volunteers .....	201	194	229
Hours Donated by Volunteers .....	21,340	22,106	22,102
Physical Medicine Treatments incl. Occupational Therapy .....	40,359	37,338	25,753
Total Number of Employees .....	744	778	746

**Out-Patient Department**

First Visits .....	3,996	3,905	4,549
Revisits .....	30,398	31,269	32,704
Total .....	34,394	35,174	37,253



## ACCOUNTANTS' OPINION

To the Board of Managers

New York Society for the Relief of the Ruptured  
and Crippled, Maintaining the Hospital for Special  
Surgery and the Margaret M. Caspary Clinic  
New York, New York 10021

We have examined the balance sheet of the New York Society for the Relief of the Ruptured and Crippled, Maintaining the Hospital for Special Surgery and the Margaret M. Caspary Clinic as of December 31, 1969, and the related statement of changes in fund balances and statement of income and expense for the year then ended. Our examination was made in conformity with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

All securities owned by the Society at December 31, 1969, were held by the United States Trust Co. as custodian, and income from interest, dividends and gains and losses on security transactions for the year under review are stated as shown in the records of the custodian.

In our opinion, subject to the foregoing, the accompanying balance sheet, statement of changes in fund balances and statement of income and expense, together with footnotes, fairly present the financial position of the Society at December 31, 1969 and the results of its operations for the year then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

MacNICHOL, JOHNSON & CO.

New York, New York  
April 16, 1970

## Comparative Balance Sheet as

ASSETS	December 31, 1969	December 31, 1968
<b>Operating Fund</b>		
Cash in banks and office .....	\$ 84,436	\$ 3,456
Patients' accounts receivable .....	\$1,111,146	\$899,637
Less: Allowance for uncollectible accounts .....	151,112	136,065
Due from Blue Cross Plans .....	196,539	201,312
Loans receivable .....	159,700	151,600
Inventory of materials and supplies .....	181,527	131,385
Miscellaneous accounts receivable .....	24,373	51,247
Prepaid expenses .....	28,966	35,343
Deferred expenses .....	50,010	65,711
<b>Total</b> .....	<u>1,685,585</u>	<u>1,403,626</u>
<b>Investment Fund</b>		
Cash .....	180,775	208,117
Pledge receivable .....	—	20,000
Investments:		
Sutton Terrace Apartments (Note 5) .....	830,000	—
Other (Market Value—December 31, 1969—\$7,835,242) .....	4,821,979	4,142,865
Due from Other Funds (net) .....	212,870	—
<b>Total</b> .....	<u>6,045,624</u>	<u>4,370,982</u>
<b>Permanent Funds</b>		
Cash .....	27,536	165,411
Investments (Market Value—December 31, 1969—\$2,862,546) .....	2,329,088	2,226,976
<b>Total</b> .....	<u>2,356,624</u>	<u>2,392,387</u>
<b>Temporary Funds for Designated Purposes</b>		
Cash .....	545	406,253
Investments (Market Value—December 31, 1969—\$1,792,071) .....	1,807,186	2,383,402
Due from Other Funds (net) .....	471,243	70,597
<b>Total</b> .....	<u>\$2,278,974</u>	<u>\$2,860,252</u>

**Notes:**

- Unpaid pledges at December 31, 1969, are not reflected in the financial statements.
- No final determination has been made with respect to retroactive rate adjustments which may be due from or payable to the Associated Hospital Service of New York, for services to Medicare and Blue Cross patients, admitted during 1966, 1967, 1968 and 1969. Accruals have been made for services rendered to Blue Cross patients for all years except 1966. No accruals have been made for services to Medicare patients.
- Final settlements have not been made with respect to services rendered to Medicaid patients during the period July 1, 1967 to December 31, 1969. No accruals have been made to reflect these settlements.



# December 31, 1969 and December 31, 1968

	December 31, 1969	December 31, 1968
<b>LIABILITIES, CAPITAL AND SURPLUS</b>		
<b>Operating Fund</b>		
Accounts payable .....	\$ 370,277	\$ 294,556
Accrued salaries payable .....	50,718	32,250
Withholding and social security taxes payable .....	71,501	116,917
Advances from Associated Hospital Service of New York for Blue Cross and Medicare .....	56,506	59,077
Miscellaneous liabilities .....	142,957	169,285
Reserve for insurance premium adjustments .....	36,000	36,000
Due to Other Funds (net) .....	676,996	70,597
Working Capital (Exhibit B) .....	280,630	624,944
<b>Total</b> .....	<u>1,685,585</u>	<u>1,403,626</u>
<b>Investment Fund</b>		
Fund for Depreciation (Exhibit B) .....	205,908	80,755
Investment Fund Principal (Exhibit B) .....	5,839,716	4,290,227
<b>Total</b> .....	<u>6,045,624</u>	<u>4,370,982</u>
<b>Permanent Funds</b>		
Principal—Restricted as to Use of Income (Exhibit B) .....	2,076,973	1,991,538
Principal—Unrestricted as to Use of Income (Exhibit B) .....	216,866	331,549
Unexpended balance of Restricted Income (Exhibit B) .....	51,124	69,300
Due to Other Funds (net) .....	11,661	—
<b>Total</b> .....	<u>2,356,624</u>	<u>2,392,387</u>
<b>Temporary Funds for Designated Purposes</b>		
Unappropriated Principal (Exhibit B) .....	2,278,974	2,860,252
<b>Total</b> .....	<u>\$2,278,974</u>	<u>\$2,860,252</u>

4. The values shown for Fixed Assets in the Plant Fund at December 31, 1969 for buildings, fixed and major movable equipment, and non-depreciable equipment and the related accumulated depreciation are based on a plant ledger which was prepared by the Industrial Appraisal Co. as at November 11, 1967. The values established were cost, or where this information was not available, an estimate of cost as of date acquisition based on observed age and condition, was used. This plant ledger was revised by the hospital staff as of December 31, 1966 and updated to December 31, 1969. Hospital plant records were adjusted accordingly. Acquisition subsequent to December 31, 1966 were recorded at cost.

Depreciation on the adjusted undepreciated value of equipment as of December 31, 1968 was computed on a straight-line method based on the estimated  
(Notes continued on next page)

## Comparative Balance Sheet as at December 31, 1969

ASSETS	December 31, 1969	December 31, 1968
<b>Research Fund</b>		
Cash .....	\$ 32,146	\$ 11,317
Accounts Receivable:		
United States Public Health Service:		
Authorized awards .....	\$ 1,654,255	\$ 1,163,032
Less: Cash advanced .....	<u>1,390,608</u>	<u>678,178</u>
Other agencies .....	22,726	5,732
Investments (Market Value—December 31, 1969—\$450,512) .....	260,810	432,909
Due from Other Funds (net) .....	<u>4,544</u>	<u>—</u>
<b>Total</b> .....	<u>583,873</u>	<u>934,812</u>
 <b>Plant Fund</b>		
Land .....	1,399,343	1,399,343
Buildings:		
Cost .....	10,998,439	10,998,439
Less: Accumulated depreciation .....	<u>3,418,853</u>	<u>2,785,517</u>
Equipment:		
Cost .....	3,495,066	3,224,897
Less: Accumulated depreciation .....	<u>1,570,614</u>	<u>1,352,903</u>
Non-depreciable fixed assets .....	65,674	125,674
<b>Total</b> .....	10,969,055	11,609,933
Completed Construction Projects .....	200,274	—
Construction in progress .....	<u>117,458</u>	<u>140,482</u>
<b>Total</b> .....	<u>11,286,787</u>	<u>11,750,415</u>
<b>TOTAL ASSETS</b> .....	<u>\$24,237,467</u>	<u>\$23,712,474</u>

Notes: (Continued)

remaining useful lives. Depreciation on the adjusted undepreciated value of all buildings as of December 31, 1968 was computed on the sum of the years digits method based on the estimated remaining useful lives.

5. On August 1, 1969, the Society and five other institutions purchased, as tenants in common, the Sutton Terrace Apartments at 430 East 63rd. Street, 450 East 63rd. Street and 1161 York Avenue, New York, New York. The Society's pro rata share (10%) of the purchase price of the land and building was \$1,806,729 and consisted of a cash payment of \$800,000 and an assumption of two existing mortgages on the land and buildings in the amount of \$1,006,729. The Society has also made working capital contributions totalling \$30,000 since the date of acquisition. The Society's 10% equity as at December 31, 1969, as re-



# and December 31, 1968 (Continued)

## LIABILITIES, CAPITAL AND SURPLUS

### Research Fund

	December 31, 1969	December 31, 1968
Accounts payable .....	\$ 3,428	\$ 109,897
Principal: (Exhibit B)		
United States Public Health Service:		
Authorized awards .....	\$ 1,654,255	\$ 1,163,032
Less: Expenditures to date .....	<u>1,472,056</u>	<u>792,190</u>
Other grants awarded .....	182,199	370,842
Institutional Funds .....	170,128	135,751
	<u>228,118</u>	<u>318,322</u>
<b>Total</b> .....	<u>583,873</u>	<u>934,812</u>

### Plant Fund

Loan payable .....	1	1
Mortgage payable .....	899,798	922,763
Plant Capital (Exhibit B) .....	<u>10,386,988</u>	<u>10,827,651</u>
<b>Total</b> .....	<u>11,286,787</u>	<u>11,750,415</u>
<b>TOTAL LIABILITIES, CAPITAL AND SURPLUS</b> .....	<u>\$24,237,467</u>	<u>\$23,712,474</u>

ported by other independent certified public accountants, is as follows:

Total Assets (including real estate) .....	\$1,833,303
Total Liabilities (including \$999,783 unpaid mortgage debt) .....	<u>1,018,613</u>
<b>Society's Equity—December 31, 1969</b> .....	<u>\$ 814,690</u>

6. Under the pension plan as established by the Society for the benefit of its employees and amended effective June 1, 1969, the contingent liability for past service benefits as of December 31, 1969, computed by the Society's actuaries is \$607,355.

## EXHIBIT B

### Summary of Changes in Principal Balances of all Funds During the Year Ended December 31, 1969

	Total All Funds	Working Capital	Investment Fund Principal	Fund For Depreciation	Permanent Fund Principal and Restricted Principal	Temporary Funds for Designated Purposes	Research Fund	Fund for Capital Costs	Plant Fund Capital
<b>Balances—December 31, 1968</b>	\$21,901,131	\$624,944	\$4,290,227	\$ 80,755	\$2,392,387	\$2,860,252	\$ 824,915	\$ —	\$10,827,651
Add:									
Transferred from other funds .....	3,024,703	585,977	1,148,695	240,000	250,303	1,392	247,339	79,142	471,855
Legacies, gifts and grants received .....	1,272,279	—	33,380	—	256,338	310,069	672,492	—	—
Net gain or (loss) from sale of investments .....	(18,613)	—	(14,405)	—	(34,214)	29,462	544	—	—
Non-operating income (net) .....	1,021,277	—	427,898	—	65,014	135,175	393,077	113	—
Retroactive rate adjustments .....	64,105	64,105	—	—	—	—	—	—	—
Capitalization of investments at nominal value .....	3	—	3	—	—	—	—	—	—
Gain on sale of Society's interest in premises—1088 Park Avenue, New York, New York .....	53,208	—	53,208	—	—	—	—	—	—
<b>Total Additions .....</b>	<b>5,416,962</b>	<b>650,082</b>	<b>1,648,779</b>	<b>240,000</b>	<b>537,441</b>	<b>476,098</b>	<b>1,313,452</b>	<b>79,255</b>	<b>471,855</b>
Deduct:									
Transferred to:									
Working Capital .....	585,977	—	—	—	—	5,003	—	—	580,974
Investment Fund .....	1,148,695	—	—	—	515,876	510,764	—	—	122,055
Fund for Depreciation .....	240,000	240,000	—	—	—	—	—	—	—
Temporary Funds for Designated Purposes .....	1,392	—	—	—	—	—	—	—	1,392
Permanent Funds .....	250,303	—	—	—	—	250,303	—	—	—
Research Fund .....	247,339	—	—	—	39,242	—	—	—	208,097
Plant Fund Capital .....	471,855	4,800	99,290	114,847	—	129,163	44,500	79,255	—
Fund for Capital Costs .....	79,142	79,142	—	—	—	—	—	—	—
Disbursements charged against principal .....	1,705,312	—	—	—	29,747	162,143	1,513,422	—	—
Hospital Operating Loss—Exhibit C .....	670,454	670,454	—	—	—	—	—	—	—
<b>Total Deductions .....</b>	<b>5,400,469</b>	<b>994,396</b>	<b>99,290</b>	<b>114,847</b>	<b>584,865</b>	<b>1,057,376</b>	<b>1,557,922</b>	<b>79,255</b>	<b>912,518</b>
<b>Balances—December 31, 1969</b>	<b>\$21,917,624</b>	<b>\$280,630</b>	<b>\$5,839,716</b>	<b>\$205,908</b>	<b>\$2,344,963</b>	<b>\$2,278,974</b>	<b>\$ 580,445</b>	<b>\$ —</b>	<b>\$10,386,988</b>



# EXHIBIT C

## Condensed Comparative Statement of Income and Expense

For the years ended December 31, 1969 and December 31, 1968

	Year Ended December 31,	
	1969	1968
Income from patients, less allowances .....	\$8,111,847	\$6,993,359
Less: Provision for uncollectible accounts receivable .....	60,000	60,000
<b>Income from Patients after Deductions .....</b>	<b>8,051,847</b>	<b>6,933,359</b>
<b>Add: Other Hospital Operating Income</b>		
Rental of living quarters .....	163,510	93,024
Professional fees .....	89,453	72,643
Sales to other than patients .....	29,531	30,823
Overhead earned from Research Division .....	113,411	96,000
Telephone income .....	23,124	18,238
Garage rent .....	26,327	18,774
Cafeteria receipts .....	111,874	100,498
Coffee Shop receipts .....	62,666	57,078
Gift Shop receipts .....	45,832	17,305
Miscellaneous .....	57,039	58,553
<b>Total Other Hospital Operating Income .....</b>	<b>722,767</b>	<b>562,936</b>
<b>Total Hospital Operating Income .....</b>	<b>8,774,614</b>	<b>7,496,295</b>
<b>Operating Expenses</b>		
Salaries and wages .....	5,795,897	4,930,230
Supplies and expense .....	3,149,216	2,615,838
Depreciation of buildings and equipment .....	580,895	539,573
<b>Total Operating Expenses (Note A) .....</b>	<b>9,526,008</b>	<b>8,085,641</b>
<b>Hospital Operating Loss .....</b>	<b>751,394</b>	<b>589,346</b>
Less: Transfers from Other Funds .....	80,940	175,190
<b>Excess of Hospital Operating Expenses over Hospital Operating Income (Charged to Working Capital) .....</b>	<b>670,454</b>	<b>414,156</b>
<b>Supplementary Income</b>		
Interest and dividends .....	222,918	190,322
Income from estates and trusts .....	73,942	71,131
Contributions and Agency Grants .....	227,045	259,861
Income from 71st Street property (net) .....	19,764	7,173
<b>Total Supplementary Income .....</b>	<b>543,669</b>	<b>528,487</b>
Less:		
Fund Raising and Public Relations Planning .....	43,622	39,126
Expenses on DeBruce property .....	14,041	—
Management of investments .....	9,193	6,207
Expenses on 72nd Street property .....	48,915	55,023
<b>Total Deductions from Supplementary Income .....</b>	<b>115,771</b>	<b>100,356</b>
<b>Supplementary Income—(Net) (Credited to Investment Fund Principal) .....</b>	<b>427,898</b>	<b>428,131</b>
<b>Net Income (Loss) for Year .....</b>	<b>\$ (242,556)</b>	<b>\$ 13,975</b>

### Note:

(A) Expenditures made during 1969 for research salaries and supplies amounting to \$1,114,557 were paid with special funds designated for such purposes and are not included in the above operating expenses.

## Department of Research

### Detail of Changes in the Research Fund During the Year Ended December 31, 1969

	Total All Funds	Research Funds	U.S. Public Health Grants	Other Grants
<b>Balances Available at December 31, 1968</b>	\$ 824,915	\$315,408	\$370,842	\$138,665
Additions:				
Income earned and appropriated (including revenues) . . . .	393,077	393,077(A)	—	—
New gifts and grants received . . . . .	672,492	5,226	491,224	176,042
Net gain from the sale of investments . . . . .	544	544	—	—
Transfers from other funds . . . . .	247,339	247,339	—	—
<b>Total Additions</b> . . . . .	\$1,313,452	\$646,186	\$491,224	\$176,042
Deductions:				
Salaries . . . . .	671,692	257,209	373,376	41,107
Supplies and expenses . . . . .	442,865	120,919	238,968	82,978
Overhead . . . . .	190,768	113,411	77,357	—
Equipment purchased . . . . .	44,500	3,740	21,411	19,349
Depreciation on building and equipment . . . . .	208,097	208,097	—	—
<b>Total Deductions</b> . . . . .	\$1,557,922	\$703,376	\$711,112	\$143,434
Overexpended U. S. Public Health Grants absorbed by institutional funds . . . . .	—	(30,100)	31,245	(1,145)
<b>Balances Available at December 31, 1969</b> . . . . .	\$ 580,445	\$228,118	\$182,199	\$170,128

(A) Includes \$194,914 received by the Hospital in 1969 as an income beneficiary in perpetuity of the Trust under the will of Helen G. Bicknell.

## Philip D. Wilson Research Foundation

### Comparative Balance Sheet as at December 31, 1969 and December 31, 1968

ASSETS	December 31, 1969	December 31, 1968
Cash . . . . .	\$ 31,404	\$ 24,046
Investments (market value — Dec. 31, 1969 — \$119,000) . . . . .	119,000	131,000
Loan Receivable . . . . .	1	1
<b>TOTAL ASSETS</b> . . . . .	\$150,405	\$155,047
<b>PRINCIPAL</b>		
Beginning Balance . . . . .	\$155,047	\$144,980
Contributions received . . . . .	170	990
Income from investments . . . . .	9,352	9,945
Sundry expenses . . . . .	(147)	(868)
Transfers to Research Division for special project . . . . .	(14,017)	—
<b>PRINCIPAL BALANCE</b> . . . . .	\$150,405	\$155,047





## 1864-1969 OFFICERS OF THE SOCIETY

### PRESIDENTS

(Dates Inclusive)

Green, John C. ....	1864-1874
Brown, Stewart ....	1875-1879
Willets, Samuel ....	1880-1883
Macy, William H. ....	1883-1887
Osborn, William H. ....	1887-1890
Isham, William B. ....	1891-1901
Sturges, Frederick ....	1901-1910
Osborn, William Church ....	1910-1925
Melcher, John S. ....	1926-1928
Osborn, William Church— Acting President ....	1928-1930
Osborn, William Church ....	1931-1937
Osborn, William Church— President Emeritus ....	1938-1951
Rossiter, Arthur W. ....	1938-1948
Duryee, Samuel S. ....	1948-1958
Bastedo, Philip ....	1958-

### CHAIRMAN OF THE EXECUTIVE COMMITTEE

Miller, Lawrence McK. ....	1956-
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### VICE-PRESIDENTS

(Dates Inclusive)

Minturn, Robert B. ....	1864-1865
Brown, Stewart ....	1864-1874
Lenox, James ....	1864-1879
Wetmore, A. R. ....	1864-1880
Wolfe, John David ....	1864-1872
Griswold, George ....	1866-1875
Willets, Samuel ....	1873-1879
Corning, H. K. ....	1875-1877
Macy, William H. ....	1876-1882
Terbell, Henry ....	1878-1887
Hoe, Robert ....	1880-1883
Colgate, Robert ....	1880-1884
Osborn, William H. ....	1881-1886
Potter, Orlando ....	1883-1893
Iselin, Adrian ....	1884-1904
Isham, William B. ....	1885-1890
Agnew, Alexander L. ....	1887-1890
Webb, William H. ....	1888-1894
Kingland, William M. ....	1892-1904
Thorne, Samuel ....	1892-1905
Kennedy, John S. ....	1894-1908
Bliss, George ....	1895
Willets, John T. ....	1897-1911

Stearns, John Noble ....	1906
Wing, John D. ....	1905-1909
Macy, William H., Jr. ....	1908-1912
Sloane, William ....	1912-1916
Iselin, Ernest ....	1931-1951
Brown, Vernon Carleton ....	1935-1944
Wing, Morgan ....	1937-1948
Thieriot, Charles H. ....	1940
Wilmerding, Lucius ....	1941-1949
Duryee, Samuel S. ....	1945-1948
Wing, Morgan, Jr. ....	1948-1952
Miller, Lawrence McK. ....	1949-1956
Finch, Henry L. ....	1949-1956
Symington, Charles J. ....	1951-1955
Pillot, Andre P. ....	1952-1958
Fletcher, Mrs. Walter D. ....	1955-1965
Reynolds, Mrs. John H. ....	1956-
Noel, Louis W. ....	1956-1966
Hilson, Mrs. Edwin I. ....	1957-
Stevenson, T. Kennedy ....	1958-1963
Rawle, Marshall ....	1964-

### ADMINISTRATIVE VICE PRESIDENT

Young, T. Gordon ....	1966-
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### TREASURERS

(Dates Inclusive)

Sturges, Jonathan ....	1864-1874
Sturges, Frederick ....	1875-1906
Melcher, John S. ....	1907-1925
Shearer, George L. ....	1926-1946
Stewart, Wm. A. W. ....	1946-1955
Stewart, E. Sheldon ....	1955-1965
Dyson, Charles H. ....	1965-

### ASSISTANT TREASURERS

Hoguet, Robert L., Jr. ....	1956-1963
Dyson, Charles H. ....	1964-1965
Harris, Henry U. ....	1965-
O'Neill, James D. ....	1966-

### CORRESPONDING SECRETARIES AND RECORDING SECRETARIES

Hartley, Robert M. ....	1864-1875
Collins, Joseph B. ....	1864-1867
Swan, Otis D. ....	1868-1876
Warburton, A. F. ....	1876-1878
Abbe, George W. ....	1877-1879
Stewart, W. A. W. ....	1879-1887
Townsend, John P. ....	1886-1897
Stetson, Francis Lynde ....	1888-1889
Sturges, William C. ....	1890-1896
Jennings, Walter ....	1899

Osborn, William Church ....	1900-1909
Stearns, John Noble ....	1924-1930
Eyre, Edgar Ainsworth ....	1924-1935
Miller, Lawrence McK. ....	1931-1949
Finch, Henry L. ....	1936-1949
Townsend, Reginald T. ....	1949-1956
Melcher, John ....	1949-1956
Hilson, Mrs. Edwin I. ....	1957-1958
Rawle, Marshall ....	1957-1964
Osborn, William H., Jr. ....	1958-

## 1864-1969 BOARD OF MANAGERS

(Dates Inclusive)

Abbe, George W. ....	1864-1879
Agnew, Alexander McL. ....	1876-1890
Amory, Mrs. Harcourt, Jr. ....	1966-
Bastedo, Philip ....	1955-
Beekman, James W. ....	1864-1865
Billings, Frederick ....	1868-1870
Bishop, David Wolfe ....	1888-1899
Bishop, Nathan ....	1882-1899
Bliss, George ....	1864-1867
Bliss, Walter ....	1887-1895
Bonner, Robert ....	1911-1922
Booth, William A. ....	1879-1881
Booth, William A. ....	1864-1865
Bradford, William H. ....	1864-1865
Brock, Mrs. Horace ....	1878-1895
Brown, Stewart ....	1966-
Brown, Vernon C. ....	1864-1879
Cabot, F. Higginson ....	1931-1944
Caswell, John ....	1926-1928
Chapin, L. H. Paul ....	1866-1867
Church, John A. ....	1931-1935
Clark, C. C. ....	1940-1941
Clark, George C., Jr. ....	1888-1899
Colgate, Charles ....	1906-1909
Colgate, R. R. ....	1872-1877
Colgate, Robert ....	1908-1921
Collins, Joseph B. ....	1869-1884
Collins, Paul J. ....	1864-1867
Cooper, Peter ....	1969-
Corning, H. K. ....	1866-1870
Dammond, Mrs. Donald G. ....	1866-1877
Davison, F. Trubee ....	1969-
Davison, H. P. ....	1923-1924
Denny, Thomas ....	1912-1921
DePew, Chauncey M. ....	1864-1875
Draper, William H. ....	1897-1901
Drexel, Mrs. John R., III ....	1897-1900
Duryee, Samuel S. ....	1959-1961
Dyson, Charles H. ....	1940-1961
Eliot, Howard ....	1959-
Fancher, Enoch L. ....	1920-1928
Fancher, Enoch L. ....	1864-1865



Finch, Henry L. ....1920-1960  
 Fiske, Josiah M. ....1879-1881  
 Fletcher, Walter D. ....1941  
 Fletcher, Mrs. Walter D. ....1950-1965  
 Fried, Mrs. Walter J. ....1962-  
 Furland, Richard M. ....1968-  
 Gibson, W. Frazer ....1931-1937  
 Gilman, William C. ....1864-1871  
 Eyre, Edgar Ainsworth ....1923-1935  
 ....1945-1955  
 Gillespie, S. Hazard ....1955-1959  
 ....1961-  
 Golding, Jerrold R. ....1953-1967  
 Green, John C. ....1864-1874  
 Griswold, George ....1864-1875  
 Hagaman, Frederick P. ....1957-1962  
 Handy, Parker ....1874-1876  
 Harris, Henry U., Jr. ....1961-  
 Hartley, Robert M. ....1864-1875  
 Hartshorn, Dr. W. Morgan ....1941-1955  
 Harvey, Alexander D. ....1957-1965  
 Hay, Louis C. ....1929-1938  
 Hayes, R. Somers ....1901-1904  
 Hilson, Edwin I. ....1951-1952  
 Hilson, Mrs. Edwin I. ....1952-  
 Hoe, Robert ....1878-1883  
 Hoffman, Samuel V. ....1873  
 Hoepli, Mrs. M. Henry ....1958-1962  
 Hoffman, William B. ....1887-1890  
 Hogue, Dr. Joseph P. ....1931-1946  
 Hogue, Robert L., Jr. ....1953-1969  
 Holbrook, Mrs. John ....1962-1967  
 Hoppin, William W. ....1936-1948  
 Houghton, Mrs. Arthur A., Jr. ....1968-  
 Hutton, Mrs. Edward F. ....1955-1959  
 Iselin, Adrian ....1881-1904  
 Iselin, Adrian, Jr. ....1902-1928  
 Iselin, Ernest ....1929-1951  
 Isham, William B. ....1880-1908  
 Jackson, William H. ....1953-1955  
 Jaffrey, Edward S. ....1866-1877  
 Jennings, Walter ....1892-1899  
 Johnson, Mrs. Deane F. ....1966-  
 Kellogg, James C., III ....1964-  
 Kennedy, John S. ....1890-1908  
 Kingsland, William M. ....1877-1904  
 Knapp, Theodore J. ....1943-1947  
 Lapham, Lewis A. ....1955-1957  
 Lawrence, Effingham ....1939-1940  
 Lawrence, James F. ....1963-  
 Lenox, James ....1864-1879  
 Livingston, John C. ....1908-1914  
 Lowman, Lawrence W. ....1969-  
 McLane, Guy R. ....1906-1911  
 ....1914-1920  
 Macy, William H. ....1871-1886

Macy, William H., Jr. ....1892-1912  
 Magoun, George C. ....1886-1891  
 Melcher, John ....1926-1956  
 Melcher, John S. ....1906-1927  
 Miller, Charles A. ....1894-1897  
 Miller, Lawrence McK. ....1926-  
 Minturn, Robert B. ....1864-1865  
 Mixter, David M. ....1960-  
 Moore, William S. ....1938-1940  
 Morgan, Hon. Edwin D. ....1880-1881  
 Noel, Louis W. ....1936-1966  
 Osborn, A. Perry ....1941-1951  
 Osborn, Frederick H. ....1913-1928  
 Osborn, William Church ....1892-1951  
 Osborn, Earl D. ....1951-1963  
 Osborn, William H., Jr. ....1957-  
 Parris, Gurchard ....1969-  
 Parsons, Henry I. ....1908-1912  
 Parsons, Thomas III ....1968-  
 Pennoyer, Paul G. ....1955-1957  
 Pierson, Dr. Richard N. ....1957-1963  
 Pilot, Andre P. ....1941-1958  
 Pool, Beekman H. ....1948-1950  
 Potter, Frederick ....1910-1916  
 Potter, Orlando ....1921-1924  
 Potter, Orlando B. ....1875-1893  
 Prentice, Robert Kelly ....1906-1958  
 Pruyn, Erving ....1931-1942  
 Quincy, John W. ....1864-1870  
 Rawle, Marshall ....1955-  
 Redmond, Geraldyn ....1907-1918  
 Redmond, Ronald S. ....1919-1924  
 Reynolds, Mrs. John H. ....1949-  
 Robbins, Chandler ....1876-1887  
 Rockefeller, William A. ....1923-1930  
 Rogers, Francis Day ....1961-1966  
 Rossiter, Arthur W. ....1921-1950  
 Schulte, Arthur D. ....1967-  
 Scoville, Robert ....1931-1934  
 Shearer, George L. ....1921-1946  
 Simmons, Frank Hunter ....1917-1927  
 ....1929-1930  
 Sloane, William ....1900-1916  
 Smith, S. Sidney ....1900-1921  
 Stearns, John Noble ....1889-1906  
 Stearns, John N. ....1902-1908  
 ....1909-1936  
 Stearns, John N., Jr. ....1919-1930  
 Stetson, Francis Lynde ....1888-1889  
 Stevenson, T. Kennedy ....1949-1965  
 Stewart, E. Sheldon ....1947-1965  
 Stewart, W. A. W. ....1879-1887  
 Stewart, Wm. A. W. ....1946-1955  
 Stout, Francis A. ....1883-1888  
 Straus, Kenneth H. ....1966-1967  
 Straus, Nathan, III ....1950-1958

Stuart, Robert L. ....1871-1909  
 Sturges, Arthur P. ....1897-1909  
 Sturges, Frederick ....1871-1909  
 Sturges, Frederick ....1931-1935  
 Sturges, Jonathan ....1864-1874  
 Sturges, William C. ....1885-1896  
 Swan, Otis D. ....1866-1876  
 Symington, Charles J. ....1941-1955  
 Terbell, Henry S. ....1864-1887  
 Thieriot, Charles H. ....1936-1940  
 Thieriot, Charles H. ....1965-  
 Thorne, Samuel ....1880-1905  
 Tompkins, B. A. ....1952-1955  
 Townsend, John P. ....1876-1897  
 Townsend, Reginald T. ....1944-1957  
 Trumbull, Frank ....1913-1919  
 Vanderbilt, Cornelius ....1881-1895  
 VanRensselaer, Alex. ....1874-1878  
 Wall, Albert Carey ....1957-1960  
 Warburton, A. F. ....1876-1878  
 Webb, H. Walter ....1893-1898  
 Webb, William H. ....1882-1894  
 Wetmore, A. R. ....1864-1880  
 Whitman, Dr. Royal ....1932-1934  
 Willets, Howard ....1913-1928  
 Willets, John T. ....1866-1911  
 Willets, Samuel ....1868-1882  
 Wilmerding, Lucius ....1935-1949  
 Wing, John D. ....1896-1909  
 Wing, J. Morgan ....1912-1928  
 Wing, Morgan ....1921-1950  
 Wing, Morgan, Jr. ....1946-1953  
 Witter, Dean, Jr. ....1959-1966  
 Witthaus, Rudolph A. ....1864  
 Wolfe, John David ....1864-1872  
 Wood, Oliver ....1864-1868  
 ....and 1870  
 Wriston, Walter B. ....1958-

#### HONORARY MEMBERS

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 Fletcher, Mrs. Walter D. ....1965-  
 Hartshorn, Dr. W. Morgan ....1955-1956  
 Harvey, Alexander D. ....1965-1968  
 Holbrook, Mrs. John ....1968-  
 Osborn, Earl D. ....1964-  
 Pierson, Richard N., M.D. ....1964-  
 Pilot, Andre P. ....1958-1963  
 Stevenson, T. Kennedy ....1965-1970  
 Stewart, E. Sheldon ....1965-  
 Stewart, William A. W. ....1955-1960  
 Symington, Charles J. ....1955-  
 Tompkins, B. A. ....1962-  
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(Executive Assistant to Surgeon-in-Chief)  
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Victor Mayer, M.D.  
Leon Root, M.D.

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Rudolph Dangelmajer, M.D.  
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\*Resigned 7-1-69

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Else Pappenheim, M.D.

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#### ASSISTANT ATTENDING PEDIATRICIANS

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Hart deC. Peterson, M.D.  
Lucie Rudd, M.D.  
William T. Seed, M.D.

### DEPARTMENT OF PHYSICAL MEDICINE

#### DIRECTOR

Anna Kara, M.D.

#### PHYSICIAN TO OUT- PATIENT DEPARTMENT

Willibald Nagler, M.D.

### PSYCHIATRIC- PSYCHOLOGICAL LIAISON SERVICE

#### ASSISTANT ATTENDING PSYCHOLOGIST

David Clayson, Ph.D.



**ASSISTANT IN  
PSYCHIATRY**

James Warren Brown, M.D.

**DEPARTMENT OF  
RADIOLOGY**

**DIRECTOR**

Robert H. Freiburger, M.D.

**ASSISTANT ATTENDING  
RADIOLOGISTS**

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Margaret O. Harrison, M.D.  
Waltraud-Gisela Ryan, M.D.

**THE SUSAN GREENWALL  
DIRECTORSHIP FOR  
REHABILITATION MEDICINE**

**DIRECTOR**

William Cooper, M.D.

**DEPARTMENT OF  
RHEUMATIC DISEASES**

**DIRECTOR**

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Robert M. Lintz, M.D.

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PHYSICIANS**

Carl A. Berntsen, Jr., M.D.  
Abraham S. Jacobson, M.D.  
William C. Robbins, M.D.  
Bernard Rogoff, M.D.  
Sidney Rothbard, M.D.  
Emmanuel Rudd, M.D.

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Edgar J. Desser, M.D.  
Martin Gardy, M.D.  
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Thomas T. Bowman, M.D.  
Bruce Nitsberg, M.D.  
Milton A. Wald, M.D.

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Robert Winchester, M.D.

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Surgeon-in-Chief  
Director of Research

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Surgeon-in-Chief

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Orthopedic Surgeon to Out-  
Patient Department

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Chief of Pathology

I. David Horwich, M.D.  
Orthopedic Surgeon to Out-  
Patient Department

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Attending Orthopedic Surgeon

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pedic Surgeon

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Anesthesiologist

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Surgery

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Thomas Morrissey, M.D.  
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Marjorie B. Patterson, M.D.  
Assistant Attending Physician

\*Deceased



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- \*Resigned 7-1-69
- \*\*Associate Director to 6-30-69;  
Director from 7-1-69
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\*Bruce Nitsberg, M.D.  
\*Albino E. Novaes, M.D.  
Marcos Rivelis, M.D.

\*Completed training during year 1969

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\*Resigned



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A bed may be endowed by an unrestricted gift to the Society of not less than \$7,500 made for that purpose, and the donor during his life, or, if the gift is made by will, the person named in the will for a period not to exceed twenty years, shall have the right to designate an occupant of such bed. When the gift amounts to \$10,000 or more, the Society will furnish to the designated occupant of such bed without charge in any one calendar year care and services, the cost of which, computed at the Society's then scale of rates, equals the income earned by the Society on the amount of such gift, computed upon the basis of the average rate of return on the Society's general funds during the preceding calendar year. The Society will list all endowed beds in its annual report and record the same on appropriate plaques in the Hospital.

## LEGACIES OF THE SOCIETY

The Society has always been greatly aided by this form of generosity. No precise words are necessary to a valid legacy to the corporation. The following form, however, may be suggested.

"I give to New York Society for the Relief of the Ruptured and Crippled, located at 535 East 70th Street, New York City, the sum of

..... Dollars."

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Photography: Dorothy Page, Staff Photographer







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The New York Society for the Relief of the  
Ruptured and Crippled

*is affiliated with*

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*is approved for operation by*

The State of New York, Department of Health

*is accredited by*

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The Council of Teaching Hospitals  
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The Greater New York Hospital Association  
The Hospital Association of New York State  
The United Hospital Fund

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